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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 140113029-4029-01]

RIN 0648-XD080

Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List 10 Species of Skates and Rays and 15 Species of Bony Fishes as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.

ACTION: 90-day petition finding, request for information.

SUMMARY: We (NMFS) announce a 90-day finding on a petition to list 10 species of skates and rays and 15 species of bony fishes as threatened or endangered under the Endangered Species Act (ESA). We find that the petition does not present substantial scientific or commercial information indicating that the petitioned action may be warranted for five species of skates and rays: Dasyatis margarita, Electrolux addisoni, Okamejei pita, Pastinachus solocirostris, and Trygonorrhina melaleuca. We find that the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted for five species of skates and rays: Bathyraja griseocauda, Raja undulata, Rhinobatos cemiculus, R. horkelii, and R. rhinobatos. We also find that the petition does not present substantial scientific or commercial information indicating that the petitioned action may be warranted for ten species of bony fishes: Argyrosomus hololepidotus, Azurina eupalama, Chaetodontoplus vanderloosi,

Colpichthys hubbsi, Enneapterygius namarrgon, Halichoeres socialis, Paraclinus magdalenae, Paraclinus walkeri, Paralabrax albomaculatus, and Tomicodon abuelorum. And we find that the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted for five species of bony fishes: Latimeria chalumnae, Mycteroperca fusca, Mycteroperca jordani, Pterapogon kauderni, and Scarus trispinosus. Therefore, we will conduct a status review of the 10 species of skates and rays and bony fishes to determine if the petitioned action is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to these petitioned species from any interested party. In addition to the petitions to list these species, the petitioner has requested that we list the coelacanth Latimeria menadoensis based on similarity of appearance to Latimeria chalumnae. If we determine that L. chalumnae warrants listing under the ESA, we will make a determination on the petitioner's request to list L. menadoensis based on similarity of appearance at a later date.

DATES: Information and comments on the subject action must be received by [insert date 60 days after date of publication in the FEDERAL REGISTER].

ADDRESSES: You may submit comments, information, or data on this document, identified by the code NOAA-NMFS-2014-0021, by any of the following methods:

- Electronic Submissions*:* Submit all electronic comments via the Federal eRulemaking Portal. Go to www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2014-0021, click the "Comment Now!" icon, complete the required fields, and enter or attach your comments.

- Mail: Submit written comments to Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on www.regulations.gov without change. All personal identifying information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous), although submitting comments anonymously will prevent NMFS from contacting you if NMFS has difficulty retrieving your submission. Attachments to electronic comments will be accepted in Microsoft Word, Excel, or Adobe PDF file formats only.

Copies of the petition and related materials are available upon request from the Director, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, or online at: http://www.nmfs.noaa.gov/pr/species/petition81.htm.

FOR FURTHER INFORMATION CONTACT: Marta Nammack, Office of Protected Resources, 301-427-8469.

SUPPLEMENTARY INFORMATION:

Background

On July 15, 2013, we received a petition from the WildEarth Guardians to list 81 marine species as threatened or endangered under the ESA and to designate critical habitat under the ESA. Copies of this petition are available from us (see ADDRESSES). This finding addresses

25 of the fish species (10 skates and rays and 15 bony fishes) identified as part of this petition. The 10 skates and rays considered in this finding are: Bathyraja griseocauda (graytail skate), Dasyatis margarita (ray), Electrolux addisoni (ornate sleeper ray), Okamejei pita (pita skate), Pastinachus solocirostris (roughnose stingray), Raja undulata (undulate ray), Rhinobatos cemiculus (blackchin guitarfish), Rhinobatos horkelii (Brazilian guitarfish), Rhinobatos rhinobatos (common guitarfish/violinfish), and Trygonorrhina melaleuca (magpie fiddler ray). The 15 bony fishes considered in this finding are: Argyrosomus hololepidotus (Madagascar kob/Madagascar meager), Azurina eupalama (Galápagos damsel), Chaetodontoplus vanderloosi (coral reef fish), Colpichthys hubbsi (Delta silverside), Enneapterygius namarrgon (lightning man triplefin), Halichoeres socialis (social wrasse), Latimeria chalumnae (coelacanth/gombessa), Mycteroperca fusca (comb grouper/island grouper), Mycteroperca jordani (Gulf grouper), Paraclinus magdalenae (Magdalena blenny), Paraclinus walkeri (reef fish), Paralabrax albomaculatus (camotillo), Pterapogon kauderni (Banggai cardinalfish), Scarus trispinosus (greenback parrotfish), and Tomicodon abuelorum (grandparents clingfish).

Section 4(b)(3)(A) of the ESA of 1973, as amended (U.S.C. 1531 et seq.), requires, to the maximum extent practicable, that within 90 days of receipt of a petition to list a species as threatened or endangered, the Secretary of Commerce make a finding on whether that petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, and to promptly publish the finding in the Federal Register (16 U.S.C. 1533(b)(3)(A)). When we find that substantial scientific or commercial information in a petition indicates the petitioned action may be warranted (a "positive 90-day finding"), we are required to promptly commence a review of the status of the species concerned, which includes

conducting a comprehensive review of the best available scientific and commercial information. Within 12 months of receiving the petition, we must conclude the review with a finding as to whether, in fact, the petitioned action is warranted. Because the finding at the 12-month stage is based on a significantly more thorough review of the available information, a “may be warranted” finding at the 90-day stage does not prejudge the outcome of the status review.

Under the ESA, a listing determination may address a species, which is defined to also include subspecies and, for any vertebrate species, any DPS that interbreeds when mature (16 U.S.C. 1532(16)). A joint NMFS-U.S. Fish and Wildlife Service (USFWS) (jointly, “the Services”) policy (DPS Policy) clarifies the agencies’ interpretation of the phrase “distinct population segment’’ for the purposes of listing, delisting, and reclassifying a species under the ESA (61 FR 4722; February 7, 1996). A species, subspecies, or DPS is "endangered" if it is in danger of extinction throughout all or a significant portion of its range, and "threatened" if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (ESA sections 3(6) and 3(20), respectively, 16 U.S.C. 1532(6) and (20)). Pursuant to the ESA and our implementing regulations, we determine whether species are threatened or endangered based on any one or a combination of the following five section 4(a)(1) factors: the present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; inadequacy of existing regulatory mechanisms; and any other natural or manmade factors affecting the species' existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA-implementing regulations issued jointly by NMFS and USFWS (50 CFR 424.14(b)) define “substantial information” in the context of reviewing a petition to list, delist,

or reclassify a species as the amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted. When evaluating whether substantial information is contained in a petition, we must consider whether the petition: (1) clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved; (2) contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species; (3) provides information regarding the status of the species over all or a significant portion of its range; and (4) is accompanied by the appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps (50 CFR 424.14(b)(2)).

At the 90-day stage, we evaluate the petitioner's request based upon the information in the petition including its references, and the information readily available in our files. We do not conduct additional research, and we do not solicit information from parties outside the agency to help us in evaluating the petition. We will accept the petitioner's sources and characterizations of the information presented, if they appear to be based on accepted scientific principles, unless we have specific information in our files that indicates the petition's information is incorrect, unreliable, obsolete, or otherwise irrelevant to the requested action. Information that is susceptible to more than one interpretation or that is contradicted by other available information will not be dismissed at the 90-day finding stage, so long as it is reliable and a reasonable person would conclude that it supports the petitioner's assertions. Conclusive information indicating the species may meet the ESA's requirements for listing is not required

to make a positive 90-day finding. We will not conclude that a lack of specific information alone negates a positive 90-day finding, if a reasonable person would conclude that the lack of information itself suggests an extinction risk of concern for the species at issue.

To make a 90-day finding on a petition to list a species, we evaluate whether the petition presents substantial scientific or commercial information indicating the subject species may be either threatened or endangered, as defined by the ESA. First, we evaluate whether the information presented in the petition, along with the information readily available in our files, indicates that the petitioned entity constitutes a "species" eligible for listing under the ESA. Next, we evaluate whether the information indicates that the species at issue faces extinction risk that is cause for concern; this may be indicated in information expressly discussing the species' status and trends, or in information describing impacts and threats to the species. We evaluate any information on specific demographic factors pertinent to evaluating extinction risk for the species at issue (e.g., population abundance and trends, productivity, spatial structure, age structure, sex ratio, diversity, current and historical range, habitat integrity or fragmentation), and the potential contribution of identified demographic risks to extinction risk for the species. We then evaluate the potential links between these demographic risks and the causative impacts and threats identified in section 4(a)(1).

Information presented on impacts or threats should be specific to the species and should reasonably suggest that one or more of these factors may be operative threats that act or have acted on the species to the point that it may warrant protection under the ESA. Broad statements about generalized threats to the species, or identification of factors that could negatively impact a species, do not constitute substantial information that listing may be

warranted. We look for information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

Many petitions identify risk classifications made by non-governmental organizations, such as the International Union for Conservation of Nature (IUCN), the American Fisheries Society, or NatureServe, as evidence of extinction risk for a species. Risk classifications by other organizations or made under other Federal or state statutes may be informative, but such classification alone may not provide the rationale for a positive 90-day finding under the ESA. For example, as explained by NatureServe, their assessments of a species' conservation status do "not constitute a recommendation by NatureServe for listing under the U.S. Endangered Species Act" because NatureServe assessments "have different criteria, evidence requirements, purposes and taxonomic coverage than government lists of endangered and threatened species, and therefore these two types of lists should not be expected to coincide" (http://www.natureserve.org/prodServices/statusAssessment.jsp). Thus, when a petition cites such classifications, we will evaluate the source of information that the classification is based upon in light of the standards on extinction risk and impacts or threats discussed above.

With respect to the 25 fish species discussed in this finding, the petitioner relies almost exclusively on the risk classifications of the IUCN as the source of information on the status of each petitioned species. All of the petitioned species are listed as "endangered" or "critically endangered" on the IUCN Redlist, and the petitioner notes this as an explicit consideration in offering petitions on these species. Species classifications under the IUCN and the ESA are not equivalent, and the data standards, evaluation criteria, and treatment of uncertainty are also not

necessarily the same. Thus, we instead consider the information on threats identified by the petitioners, as well as the data on which they are based, as they pertain to each petitioned species.

Species Descriptions

Fishes exhibit enormous diversity in their morphology, in the habitats they occupy, and in their biology, and they include a vast array of distantly related vertebrates, including hagfish, lamprey, lungfish, and flatfish (Nelson, 1976). Of the 81 species or populations petitioned for listing, 50 are fishes: 3 hagfishes of the Order Myxiniformes; 32 cartilaginous fishes (15 sharks of the Order Lamniformes, 7 sharks of the Order Squaliformes, and 10 skates and rays of the Order Rajiformes); and 15 bony fishes (1 of the Order Coelacanthiformes, 1 of the Order Atheriniformes, 12 of the Order Perciformes, and 1 of the Order Gobiesociformes). We have already published 90-day findings for the hagfishes (78 FR 66676; November 6, 2013) and sharks (78 FR 69376; November 19, 2013), so this finding will describe our analysis of the petitioned rays and bony fishes.

Skates and Rays

The 10 petitioned species of skates and rays belong to the Order Rajiformes (Rajoids) and are in the following five families: Arhynchobatidae (softnose skates, 1 species: Bathyraja griseocauda, or graytail skate), Dasyatidae (stingrays, 2 species: Dasyatis margarita, or daisy stingray; Pastinachus solocirostris, or roughnose stingray), Narkidae (sleeper rays, 1 species: Electrolux addisoni, or ornate sleeper ray), Rajidae (skates, 2 species: Okamejei pita, or Pita skate; Raja undulata, or undulate ray), and Rhinobatidae (guitarfishes, 4 species: Rhinobatos cemiculus, or blackchin guitarfish; Rhinobatos horkelii, or Brazilian guitarfish; Rhinobatos

rhinobatos, or common guitarfish; Trygonorrhina melaleuca, or magpie fiddler ray). The Order Rajiformes includes skates and rays with a dorso-ventrally flattened body, five ventral gill openings, eyes and well-developed spiracles on top of the head, and no anal fin or nictitating membrane (a transparent or translucent third eyelid present in some animals that can be drawn across the eye for protection and to moisten it while maintaining visibility).

Most species have enlarged, thorn-like dermal denticles (structurally homologous with vertebrate teeth) on the skin, often with a row of large denticles along the spine. The pectoral fins are large but not clearly demarcated from the body, and together with the body are known as the disc. They start from the side of the head in front of the gill openings and end at the caudal peduncle (narrow part of a fish's body to which the caudal or tail fin is attached). There are up to two dorsal fins but no anal fin. There is a slender tail clearly demarcated from the disc. The caudal fin varies in size between species and the rays have a whip-like tail with no caudal fin.

Rajiformes are found throughout the world's oceans, from Arctic and Antarctic waters, from shallow coastal shelves, open seas and abyssal regions. A few are found in rivers and some in estuaries but most are marine, living near the seabed at depths down to 3,000 m or more.

In most rajoids, water for breathing is taken in through the spiracles rather than through the mouth and exits through the gill slits. Most species swim by undulating their enlarged pectoral fins, but the guitarfish propel themselves through the water with sideways movements of their tail and caudal fin. Most species are carnivores feeding on molluscs and other invertebrates on the seabed, and small fish. Some species are viviparous, others ovoviviparous (both giving birth to live young), but the skates lay eggs in horny cases known as mermaid's

purses. Most species are benthic, resting on the sandy or muddy seabed, sometimes undulating their pectoral fins to stir up sediment and bury themselves shallowly.

Bony Fishes

The 15 petitioned species of bony fishes belong to four orders: Atheriniformes (1 species), Coelacanthiformes (1 species), Gobiesociformes (1 species), and Perciformes (12 species).

The Order Atheriniformes includes fishes with dorsal, anal, and pelvic fins placed far back on the body, no spines in fins, a single dorsal fin, and pelvic fins with 6 rays. Colpichthys hubbsi, or the Delta silverside, is the one species of this order (Family Atherinopsidae) included in the petition.

The Order Coelacanthiformes includes fishes with external nostrils and a caudal fin consisting of 3 lobes. Latimeria chalumnae, or the coelacanth/gombessa, is the one species of this order (Family Latimeriidae) included in the petition. The petitioner also requested that we list Latimeria menadoensis based on similarity of appearance (ESA section 4(e)).

The Order Gobiesociformes includes fishes with no scales on their heads or bodies, 5 to 7 branchiostegal rays, and no swim bladder. Tomicodon abuelorum, or the grandparents clingfish, is the one species of this order (Family Gobiosocidae) included in the petition.

Finally, the Order Perciformes is a diverse order with many families, and it includes fishes with 2 dorsal fins and with spines in the fins. The twelve Perciformes included in this petition belong to nine families: (1) Apogonidae: Pterapogon kauderni, or Banggai cardinalfish; (2) Labridae: Halichoeres socialis, or social wrasse; (3) Labrisomidae: Paraclinus magdalenae, or Magdalena blenny; and Paraclinus walkeri, or reef fish; (4) Pomacanthidae: Chaetodontoplus

vanderloosi, or coral reef fish; (5) Pomacentridae: Azurina eupalama, or Galápagos damsel; (6) Scaridae: Scarus trispinosus, or greenback parrotfish; (7) Scianidae: Argyrosomus hololepidotus, or Madagascar kob; (8) Serranidae: Mycteroperca fusca, or comb grouper/island grouper; Mycteroperca jordani, or Gulf grouper; and Paralabrax albomaculatus, or camotillo; and (9) Tripterygiidae: Enneapterygius namarrgon, or lightning man triplefin.

Analysis of the Petition

The petition clearly indicates the administrative measure recommended and gives the scientific and common names of the species involved. Based on the information presented in the petition, along with the information readily available in our files, we find that each of the 25 petitioned species constitutes a valid "species" eligible for listing under the ESA as each is considered a valid taxonomic species (though, as the petitioner notes, there is a possibility that, with more information, Trygonorrhina melaleuca could be a mutant form of Trygonorrhina fasciata, the southern fiddler ray). With the exception of Mycteroperca jordani, which occurs off southern California, as well as in the Gulf of California, the petitioned fishes are found exclusively in foreign waters. The petition contains a narrative justification for the recommended measures and provides limited information on the species' geographic distribution, habitat, and threats. For the skates and rays, little information is provided regarding the ten species' past or present numbers, or population status and trends for all or a significant portion of the species' ranges. For some of the bony fishes, some past and present relative abundance data and provisional abundance data are provided. Supporting documentation is provided, mainly in the form of IUCN species assessments. We had no information in our files for any of the petitioned skates and rays, but did have some limited

information on one of the bony fishes, Pterapogon kauderni (Banggai cardinalfish). A synopsis of our analysis of the information provided in the petition and readily available in our files is provided below. Following the format of the petition, we first discuss the introductory information presented for each group of species and then discuss the species-specific information.

Threats to the Skates and Rays

The ten skate and ray species petitioned for listing are currently listed as either "endangered" or "critically endangered" on the IUCN Red List. The petition asserts that these species are being threatened with extinction by four of the five ESA section 4(a)(1) factors - habitat destruction, overutilization, inadequacy of regulatory mechanisms, and natural factors – which we discuss in turn below.

In terms of habitat destruction, the petition focuses on human population growth and associated consequences (e.g., pollution, rapid coastal development, climate change) as the main drivers of the destruction of skate and ray habitat. The petition states, "Increased economic growth in coastal cities is a major cause of ocean habitat destruction" and "Climate change is expected to further magnify these coastal pollution problems." Some of the associated consequences of human population growth are discussed further; however, specific information to link these general threats to skate and ray habitats or impacts to skate and ray habitat is lacking. For example, the petition discusses the increase in the number and size of "dead zones" (i.e., areas of very low levels of dissolved oxygen) worldwide, but no information is provided to indicate whether and to what extent any dead zones overlap with or affect the habitats of the petitioned species.

In terms of overutilization, the petition asserts that both bycatch and commercial harvest present threats to the ten skates and rays petitioned for listing under the ESA. Some information is presented on the extent of harvest and bycatch of some of the ten skate and ray species. The fate of by-caught skates and rays is not discussed. The petition notes that fishing that negatively affects these species is often unregulated or under-regulated and often uses unsustainable practices such as targeting pregnant females at predictable aggregations. The petition states that at least some of the petitioned species are subject to recreational fishing.

The petition states that no conservation measures are in place for nearly all of the petitioned skates and rays and that ESA listings are needed to prevent their extinction. It notes that several fisheries limit catch or effort on petitioned rays and skates (e.g., Bathyraja griseocauda), but that these limitations are often ignored, unmonitored, or based on insufficient stock status assessments. It also states that two marine reserves (Banc d'Arguin in Mauritania, and Marine Protected Areas (MPAs) in the Bijagos archipelago, the PNO marine reserve, and the PNMJVO marine reserve in Guinea-Bissau) that cover a portion of the range of two Rhinobatoid species do not provide sufficient protection because, despite a ban on targeted elasmobranch fishing in the first, and a prohibition on commercial fishing in the second, fishing for other species still occurs, resulting in bycatch. Also, the petition asserts that under-enforcement is a problem, and no information exists on the efficacy of these MPAs. We do not necessarily consider a lack of species-specific protections a threat to the particular species. For example, management measures that regulate other species, activities (e.g., commercial fisheries), or areas may indirectly function to minimize threats to the petitioned species. As stated previously, we look for substantial information indicating that not only is the particular

species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

The petition specifically points to the lack of a listing under CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) for any of these species as a threat to the petitioned skates and rays. We agree with the statement in the petition that the absence of a CITES listing for a given species is not evidence that the same species does not warrant the protections of the ESA. However, we find nothing to substantiate the statement in the petition that "…the absence of CITES listing is problematic" for the ten skate and ray species. CITES is a tool to manage and regulate international trade in situations where trade has been identified as a threat to the particular species' survival in the wild. No specific information on international trade of any of the petitioned skates and rays is presented in the petition or available to us, though the petition states, "skate landings have been increasing considerably in Argentina due to international demand," and we do not have any information in our files regarding direct harvest of these skate and ray species.

Lastly, the petition asserts that the ten skate and ray species are threatened as a result of their K-selected strategy (large size, low productivity, late age at maturity) because they are currently experiencing the type of rapid, chaotic change that makes their K-selected life history pattern a liability. The life history strategy of a species is an important factor to consider when evaluating a species' risk of extinction; however, it does not by itself indicate the likelihood of extinction of that species, nor does it constitute substantial information that listing under the ESA may be warranted. To determine whether listing of such a species may be warranted, there

must also be substantial information indicating it is both exposed to and responding in a negative fashion to a threat such that the species may be threatened with extinction.

Overall, the broad statements and generalizations of threats for all petitioned skate and ray species do not constitute substantial information indicating that listing may be warranted for any of the petitioned species. There is little information in this introductory section indicating that particular petitioned species may be responding in a negative fashion to any of the discussed threats. While some of the information in this introductory section suggests concern for the status of many marine species generally, its broadness, generality, and/or speculative nature, and the failure of the petitioner to make logical and reasonable connections to the status of the individual petitioned species means that we cannot find that this information reasonably suggests that one or more of these threat factors may be operative threats that act or have acted on any of the petitioned species to the point that it may warrant protection under the ESA. We will consider the few instances in the introductory section that specifically link threats to a particular petitioned skate or ray species in our discussion of threats to that particular species. Information for each species is from the IUCN assessment cited in the petition for that species, unless otherwise noted, and we cite that IUCN assessment in the first sentence of each species account below. References cited in the IUCN assessments are also cited below; however, many of these references were not available for us to review, and, therefore, these were taken at face value. We searched, but we found no information in our files on any of the petitioned skate and ray species.

Bathyraja griseocauda

According to the petitioner and the IUCN assessment for B. griseocauda, this benthic species occurs in the Southwest Atlantic, off Argentina and the Falkland/Malvinas Islands, and in the Southeast Pacific, off Chile (McCormack et al., 2012). It is a large (at least to 156 cm total length (TL)), oviparous, slow growing, late maturing (around 15 years of age (Agnew et al., 2000)) skate that occurs at depths between 82 and 941 m in the Southwest Atlantic (Menni and Stehmann, 2000) and 137 and 595 m off Chile (J. Lamilla pers. comm., 2006). Size at maturity has been estimated at around 120 cm TL for males (citing Stehmann et al., unpubl. data). It has a very low tolerance for changes in water temperature and water salinity levels (Figueroa et al., 1999). During research trawls around the Falkland/Malvinas Islands, B. griseocauda were more abundant in deeper trawls (200 and 350 m) and formed only a small part of the catch in shallow trawls (150 m) (Wakeford et al., 2004). Length frequency data for individuals captured around the Falkland/Malvinas Islands showed that all sizes of B. griseocauda were present, with smaller individuals found in deeper water (Wakeford et al., 2004). There is no evidence for large spatial or temporal movements, and the population off the Falkland/Malvinas Islands may complete its entire life cycle within Falkland Island waters (Wakeford et al., 2005). Small individuals feed opportunistically on benthic isopods, and larger specimens are predominantly piscivorous on Patagonotothen ramsayi.

Population size of B. griseocauda is unknown, though decreases have been detected around the Falkland Islands (Agnew et al., 2000; Wakeford et al., 2004).

The petitioner asserts that rising ocean temperatures, coupled with the species' low tolerance for changes in water temperature and water salinity levels and seeming inability to move to new areas, could mean that all of its current habitat will be unsuitable in the near future

as anthropogenic climate change progresses and continues to heat the ocean. However, the information provided is speculative, and the fact that there is no evidence of large spatial or temporal movements for this species does not mean that individuals could not move if they needed to find cooler habitat.

The petitioner asserts that the main threat to this species is fishing. In Argentina, skate landings have been increasing considerably because of international demand. "Prior to 1994, skate captures were less than 1,000 t[ons annually], however, since that year skate landings [have] increased considerably, reaching" more than 17,000 tons in 2003 (Massa et al., 2004). B. griseocauda is a regular bycatch in bottom trawl fisheries for bony fishes. The petitioner stated that "Catches have been so high that there was a 15-59% decline in the biomass of the Graytail Skate captured between 45^{o} and 55^{o}S just from 1998 to 1999," but this appears to combine B. griseocauda catch in the fishery-independent investigations for hake with captures of rays by the deep sea fishing fleet, which isn't appropriate. McCormack et al. (2007) actually stated that, during fishery-independent investigations for hake (Merluccius hubbsi) and other species, Garcia de la Rosa et al. (2000) reported a 59 percent decline in the biomass of B. griseocauda captured from 45^{o}S to 55^{o}S from 1998 to 1999; they acknowledged, however, that during the second phase of the investigations, new gear was used which likely reduced the capture of rays. The petitioner failed to note this change in gear, which makes the 59 percent decline estimate unreliable. McCormack et al. (2007) also stated that captures of rays by the deep sea fishing fleet decreased by around 15 percent from 1998 to 1999 (García de la Rosa et al., 2000). It is not clear how the petitioner came up with the 15-59 percent decline range for graytail skate, since the 15 percent figure seems to apply to catches of all ray species. B. griseocauda is also

taken in the Dipturus chilensis directed skate fishery off Argentina, which currently comprises a single vessel. The petitioner noted that, at greater depths, B. griseocauda comprised up to 18 percent of the processed catch in this fishery (Colonello et al., 2002); however, the petition failed to mention that species-specific bycatch data are not generally collected for this fishery. While this likely means that the actual catch of B. griseocauda was greater than stated in the petition, without estimates of total catch size from the single vessel or biomass of B. griseocauda in this region, we cannot determine whether this catch level is enough to cause the species to be at a significant risk of extinction.

This species is also taken in the multispecies skate trawl fishery around the Falkland/Malvinas Islands, operating since 1989. The fishery initially operated over two main areas, one located on the shelf edge to the north of the Islands, and the other to the south of the Islands. The petitioner and the IUCN assessment assert that this species was the dominant species of skate caught by finfish and ray-licensed vessels in 1993, especially in a ray "hot spot" to the south of the Islands where it comprised around 70 percent of the catch (Agnew et al., 2000). However, they go on to state that the proportion of the catch comprising B. griseocauda in the southern Falklands catch had fallen to around 5 percent by 1993. They state that the proportion of this species in catches north of the Islands also fell. Since they elaborate that total catches of the species fell from around 1,500 t to around 100 t between 1993 and 1995 in the south, and from over 1,000 t to around 250 t in the northern areas between 1993 and 1997 (Agnew et al., 2000), we can only guess that they meant to say that the proportion of the catch comprising B. griseocauda in the southern Falklands catch had fallen to around 5 percent by 1995. The mean disc width of B. griseocauda also decreased from 52.18 cm in 1993 to 38.08

cm in 1997. Following declines in the early 1990s, the southern fishing area (south of 52°S) was closed to the ray fleet in 1996. An assessment of the northern ray population indicated that the catch-per-unit-effort (CPUE) of this species declined from 100 kg/hr to less than 50 kg/hr from 1992 to 2001, but the petition failed to note that data quality was relatively poor and, because the data had to be grouped into discrete time periods rather than as a continuous variable, this low level of precision should be taken into consideration (D. Wakeford pers. comm., 2006). No studies have been conducted to determine the abundance of this species in the southern area since the skate fishery closure, but it is still caught as bycatch by finfish trawlers that operate around the Falkland/Malvinas Islands and within the closure area. While these trawlers cannot target rajids, a small bycatch (below 10 percent) is allowed. Despite the problems associated with the information presented in the petition, the likely decline in catches and the decrease in mean disc width discussed above may contribute to the extinction risk of B. griseocauda.

This species is also taken in the directed skate fishery off Chile, which primarily targets Dipturus chilensis but also lands other skate species. Of the six rajids caught in this fishery, B. albomaculata, B. brachyurops, B. griseocauda, and Rajella sadowskii make up 5 percent (Lamilla et al., 2001, 2002). Overall biomass of the target species (D. chilensis and D. trachydermus) has declined by 51 percent since fishing began in 1979 (Quiróz, 2005), so the petition argues that declines are thus also likely to have occurred for bycatch species. However, the petitioner has not provided any information on catchability of the target species compared to catchability of B. griseocauda to support such an assumption. B. griseocauda is also taken as bycatch in the artisanal Patagonian toothfish longline fishery operating at depths of 300 to 2,500

m between Iquique (20°S) and Ladrillero Gulf (49°S) (Lamilla, 2003). It is not clear from this information what impact this fishery has on B. griseocauda because no data on abundance or catch are provided.

Some regulatory mechanisms are in place within the range of B. griseocauda. In Argentine waters, total allowable catches, minimum sizes, and overall annual quotas are used for managing numerous elasmobranch species, but little attention is paid to these, and there is no regular monitoring by authorities. The petitioner states that in Chile, an annual quota for Dipturus spp. has been in place since 2005. The petitioner also notes that there is a seasonal fishery closure for the entire Chilean coast between December 1 and February 28 to protect the reproductive season of Dipturus spp., but it is unknown whether this latter measure also protects the reproductive season of B. griseocauda. However, as discussed above, there is no reliable information presented in the petition to suggest that B. griseocauda may be at risk of extinction in Argentina or in Chile. As we have stated above, we look for substantial information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

The Falkland/Malvinas Islands multispecies skate fishery is managed by limiting fishing effort, but limits are not based on species-specific information. All licensed vessels are required to provide daily catch and effort details, including discards of commercial and non-commercial species to the Falkland Island Fisheries Department; however, there is no requirement to report species-specific information. Vessels fishing under general finfish licenses are prohibited from targeting skates, although a small bycatch below 10 percent is allowed (Agnew et al., 2000).

The petitioner contends that the regulations' focus on fishing effort instead of catch limits and the lack of species-specific reporting result in insufficient protection for B. griseocauda, especially for a species that should not be targeted. Because the information in the petition indicates that B. griseocauda catches have declined and mean disc width has decreased in the Falkland/Malvinas Islands, inadequate regulatory mechanisms in this region may be negatively impacting this species.

The petitioner asserts that the late maturation of B. griseocauda, coupled with evidence of drastically decreasing average size and numbers, indicates that mature individuals are being removed at a rate faster than they are being replenished, and that this is another threat to its continued existence.

Based on the best available information, we find that the threats of overutilization by fisheries, inadequate existing regulatory mechanisms, and other natural factors may be impacting B. griseocauda to a degree that raises concerns of a risk of extinction, with significant population decline in the Falkland/Malvinas Islands. We conclude that the petition presents substantial scientific information indicating that the petitioned action of listing B. griseocauda as threatened or endangered may be warranted.

Dasyatis margarita

According to the petitioner and the IUCN assessment for D. margarita, this tropical species is endemic to the eastern-central and southeast Atlantic along the West African coast from Senegal to Congo (Compagno and Marshall, 2009). Records from outside this range (from Angola to Mauritania and the Canary Islands) may be based on D. margaritella, which has been confused with this species. As a result, this distribution of D. margarita may prove to be smaller

than described here (Compagno and Roberts, 1984). Its life history and biology are largely unknown, other than it is ovoviviparous, with 1-3 pups per litter, and it has a reported maximum size of 100 cm disc width (Stehmann, 1981). Its population size is unknown, though according to the petitioner and the IUCN assessment, catches by local fishers have declined recently, with the species now reportedly uncommon in catches.

The petitioner asserts that habitat modification and degradation from agricultural chemicals and light industry development are negatively impacting this species in some areas of its range. However, neither the IUCN assessment nor the petition provides any supporting information (or references) for this statement, such as information on the level of development in the area, the amount of chemicals entering the waters off West Africa, or evidence that the species is responding in a negative fashion to this threat. Citing the IUCN assessment, the petitioner states that fishing pressure mainly by artisanal and small scale commercial fisheries using trammel nets, bottom trawls, and beach seines (Stehmann, 1981) within its limited range is the main threat to Dasyatis margarita, as inshore rays are particularly susceptible to a wide range of fishing gear, and this species is targeted and marketed for human consumption. However, the petitioner provides no additional information, references, or data on these fisheries, such as their areas of operation or data on catch and bycatch. It is unclear how the petitioner came to the conclusion that these fisheries are negatively affecting the abundance of D. margarita. The petitioner also notes that there are no specific conservation measures in place to protect this species. Finally, the petitioner notes that this species is at increased risk of extinction because it is a K-selected species.

As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information on D. margarita or threats to the species in our own files. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for D. margarita.

Pastinachus solocirostris

According to the petitioner and the IUCN assessment for P. solocirostris, this species is endemic to the western-central Pacific and known only from Malaysian Borneo and Indonesia. (Fahmi et al., 2009). It occurs primarily in mangrove estuaries and turbid coastal marine habitats. While it most commonly occurs in very shallow water at less than 10 m depth, it has been recorded as deep as 30 m. The only pregnant female observed to date contained only one pup, suggesting low fecundity. The size at birth is about 22-23 cm disc width, with maximum size at maturity at least 72 cm disc width. Its population size and population trend are unknown.

The petitioner contends that, because this species is known to be associated with mangrove habitat in very shallow water, it is highly vulnerable to destruction of this habitat. Extensive areas of mangrove forest have been lost in Indonesia (1,300,000 hectares from 1980 to 2005) and Malaysia (110,000 hectares from 1980 to 2005) through conversion of land for shrimp farms, excessive logging, urban development, and, to a lesser extent, conversion of land

to agriculture or salt pans (FAO, 2007). Indonesia and Malaysia, therefore, have lost more than 30 percent of its combined overall mangrove area in 25 years. However, the petitioner does not provide information on the location of the mangrove loss, and the species is known to also occur in non-mangrove habitat in deeper water up to 30 m. Further, Malaysia has a very long tradition of sustainable management, plantation and afforestation programs in mangroves, and other protection plantation activities are being undertaken in Indonesia (FAO, 2007). As with other species accounts, the petitioner also cites Zamora-Arroyo et al. (2005) to support its assertion that, "[i]n the case of habitat destruction resulting from coastal development, the severity of impacts is high with low reversibility."

According to the petitioner, the other major threat to P. solocirostris is overfishing by local fisheries, as its restricted range and habitat have been heavily exploited during recent decades. This species is targeted, along with other rays, using bottom longlines in Indonesia, and it is also caught occasionally by bottom trawl and demersal gillnet fisheries operating off Sumatra and Borneo (White et al., 2006). The petitioner notes that the level of exploitation on its shallow water habitat is very high and it is considered to be at a very high level of threat throughout its range. However, the petitioner provides no additional information, references, or data on these fisheries, such as their areas of operation or data on catch and bycatch. It is unclear how the petitioner came to the conclusion that these fisheries are negatively affecting the abundance of P. solocirostris. The petitioner asserts that no conservation measures are currently in place for this species, and that this appears to be a low fecundity species, making it more vulnerable to extinction.

As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information on P. solocirostris or threats to the species in our own files. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for P. solocirostris.

Electrolux addisoni

According to the petitioner and the IUCN assessment for E. addisoni, this conspicuous species is restricted to "sandy patches of very limited inshore reef habitat off Eastern Cape and KwaZulu-Natal coasts of South Africa (Compagno, 2009)." It is known from only five localities from dive sites (Coffee Bay, Eastern Cape; Manaba Beach, the type locality near Margate, S. Africa; Protea Banks, near Margate; Aliwal Shoal; Tee Barge north of Durban off Virginia Beach), and it occurs in 50 m or less depth. Manaba Beach is the only place where it has been seen on more than one occasion, and it is likely restricted to a range of less than 10 km^2. It occurs in warm-temperate or subtropical waters along a very narrow continental shelf in subtidal environments in sandy and gravely patches on rocky reefs. It is the largest known member of the family Narkidae, with adult males measuring 50-52 cm TL. Only adult males have been collected to date. It feeds on infauna or meiofauna and lies motionless when not feeding. When threatened by predators (mainly large sharks), it arches its back and curls its

disk and raises its tail. It has electric organs. This species is apparently very rare, with few confirmed records from 1984 to present. It may be more wide-ranging than presently known, but offshore and inshore areas on the east coast of South Africa have been relatively well sampled. Its population size and trend are unknown.

The petitioner asserts that this species is possibly threatened by pollution and habitat degradation in its very limited range, as it occurs on a heavily utilized narrow strip of habitat with heavy and increasing human utilization including recreational diving and sport and commercial fishing, runaway coastal housing development, boating, commercial shipping, holiday-making, beach utilization, shark netting, and extensive pollution and habitat degradation of inshore environments. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. No such information was provided in the petition.

The petitioner asserts that the limited removals for scientific purposes and potential harassment and disturbance by divers of this species are a threat to a species that is so rare. However, while the condition of being rare is an important factor to consider when evaluating a species' risk of extinction, it does not by itself indicate the likelihood of extinction of that species, nor does the condition of being rare constitute substantial information that listing under the ESA may be warranted. To determine whether listing of a rare species may be warranted,

there must also be substantial information indicating the rare species is both exposed to and responding in a negative fashion to a threat such that the species may be threatened with extinction. The petitioner did not provide such information.

The petitioner also notes that there are no known conservation measures for this species, and that the species' limited range (10 km^2 or less) makes it vulnerable to localized stochastic events. While a very small range may increase the extinction risk of a species, we do not consider this factor alone to constitute substantial information indicating that listing under the ESA may be warranted. There must be additional information to indicate that the species may be exposed to and respond in a negative fashion to a threat. We had no information on E. addisoni or threats to the species in our own files. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for E. addisoni.

Okamejei pita

According to the petitioner and the IUCN assessment for O. pita, this species is endemic to the western Indian Ocean and is known from only one confirmed female specimen from the northernmost corner of the Persian/Arabian Gulf at Fao, Iraq (Moore and Jawad, 2009). It is probably limited to mud bottoms along the Iraqi and part of the Iranian coast of the Persian/Arabian Gulf, possibly including Kuwaiti waters. It is presumably oviparous, though nothing else is known about its biology. Its population size and trend are unknown, and no species-specific surveys have been conducted (though there was survey/fisheries work done in Iraqi waters prior to the conflict in the 1980s).

The IUCN assessment notes that the IUCN Red List Guidelines state that if a taxon is only known from its type locality and any significant threats can be identified, then an IUCN rank of Critically Endangered under the IUCN's B and C criteria may be appropriate. As we noted above, species classifications under the IUCN and the ESA are not equivalent, and data standards, criteria used to evaluate species, and treatment of uncertainty are also not necessarily the same. Therefore, we must consider the information on threats identified by the petitioners, as well as the data on which they are based, as they pertain to each species. While the condition of being rare is an important factor to consider when evaluating a species' risk of extinction, it does not by itself indicate the likelihood of extinction of that species, nor does the condition of being rare constitute substantial information that listing under the ESA may be warranted. To determine whether listing of a rare species may be warranted, there must also be substantial information indicating the rare species is both exposed to and responding in a negative fashion to a threat such that the species may be threatened with extinction.

The petitioner asserts that the area of O. pita occurrence is subject to habitat loss, degradation and deteriorating water quality, destructive fishing practices, hydrocarbon pollution, and radiological, chemical or biotic contamination (Al-Saadi and Arndt, 1973; Hussain et al., 2001; Hussain et al., 1999; Douabul, 1984; Abaychi and Al-Saad, 1988; Al-Saad, 1990; Al-Saad, 1995; Al-Saad et al., 1995; Al-Saad et al., 1996; Al-Saad and Altimari, 1993; DouAbul et al., 1987; Carroll, 2005; Birdlife International, 2006). Also, extensive damming of the Tigris-Euphrates river system in Turkey and the drainage of the Iraqi marshes during the 1990s and rapid coastal development of previously pristine and uninhabited areas, such as Bubiyan Island in Kuwait, may also have had negative impacts on the species. As in other species accounts, the

petitioner cites Zamora-Arroyo et al. (2005) to support its assertion that, "[i]n the case of habitat destruction resulting from coastal development, the severity of impacts is high with low reversibility." The petitioner does not provide specific information indicating that these threats are indeed negatively impacting O. pita. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. No such information was provided in the petition.

The petitioner asserts that the main threat to this species is thought to be overfishing. Levels of fishing-related mortality are unknown, though overfishing and illegal fishing occurs in this region. Longline, driftnet, baited mesh cage trap, intertidal skate-net trap, and trawl are the main fishing methods used in the area. For religious reasons, local Shia Muslims in southern Iraq do not consume elasmobranch fishes, so this species is likely discarded if captured. The petitioner states that fishing pressure in the area is increasing, and Iraqi fisheries are expanding southwards and apparently operating illegally in Kuwaiti and Iranian waters (Morgan, 2006). These expanding trawl and gillnet fisheries are totally unregulated, and no known conservation measures are currently in place for this species. Therefore, the petitioner argues, given this species' restricted range and already low population, it is highly likely that O. pita is especially vulnerable to fishing pressure within its range. However, as noted above, levels of fishing mortality are unknown, and the petitioner provides no information or references on catchability

of O. pita or data on catch and bycatch. It is unclear how the petitioner came to the conclusion that these fisheries are negatively affecting the abundance of O. pita. As noted previously, though the petitioner contends that there is a complete lack of protections in place for this species, we do not necessarily consider a lack of species-specific protections as a threat to the species. For example, management measures that regulate other species or fisheries operations may indirectly help to minimize threats to the petitioned species and may be adequate to prevent its extinction. Again, we look for substantial information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion. Then we assess the potential significance of that negative response.

We had no information on O. pita or threats to the species in our own files. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for O. pita.

Raja undulata

According to the petitioner and the IUCN assessment for R. undulata, this species has a patchy distribution in the eastern Atlantic, including the Mediterranean, with discrete areas where it may be locally common, including southwest Ireland, eastern English Channel, and southern Portugal (Coelho et al., 2009). In the northeast and eastern central Atlantic, it occurs from southern Ireland and southwestern England to the Gulf of Guinea, including the Canary Islands. In the Mediterranean, it occurs mostly in the west. It occurs in shelf waters to about 200 m depth, on sandy and muddy substrates, and it appears to be more common in shallow waters. Smaller specimens can be found in coastal lagoons (sheltered habitats may be nursery

areas). This species is oviparous, and it reproduces during periods of colder water. Females first mature at 8.98 years, males at 7.66 years. Size at first maturity ranges from 76.2 cm for females in the southern region to 83.8 cm for females in the western region. A discrete population occurs in Tralee Bay, Ireland, with angling records showing a peak in 1981-82, followed by lower but stable catches since then (ICES, 2007). Its population size is unknown, and it has a decreasing trend.

The petitioner contends that the main threat to this species is commercial utilization from fishing. Raja undulata is a common bycatch of trawl, trammel nets, and other demersal fisheries operating with its range. It has a patchy distribution, and declines have been documented in areas where it was formerly considered locally abundant. Tralee Bay catches declined from 80-100 in 1981 to 20-30 annually in the mid-1990s, followed by a slight population increase in the early 2000s. Catches now appear to be declining again, with less than 20 recorded in 2005 (though they fluctuate each year) (ICES, 2007). The species has traditionally been observed in English beam trawl surveys in the eastern English Channel, but has been absent for the most recent 2 years (2007-2008) (ICES, 2008). ICES current advice (2008) is no target fishing in the North Sea, English Channel, and Celtic Seas. The species is captured in large quantities as bycatch in the mixed species trammel net fishery off the southern coast of Portugal; it is retained and marketed for human consumption (Coelho et al., 2002). It is mainly captured in shallow waters, with catch-per-unit-effort from 1.91 specimens/1000 m of net at 10-30 m depth to 0.03 specimens/1000 m of net at more than 90 m depth (Coelho et al., 2005). Landings of Raja spp. in the southern region of Portugal decreased by 29.1 percent between 1988 and 2004 (DGPA, 1988-2004). Raja undulata is the most common skate species in this area, and its size makes it

more vulnerable to depletion than smaller skate species; therefore, the petitioner argues, these declines in Raja spp. may under-reflect changes in the population of this species (Erzini et al., 2001; Coelho et al., 2005). Raja undulata is also a known bycatch of the Spanish demersal trawl fleet operating in the Cantabrian Sea, southern Bay of Biscay, which targets a mixture of gadoids and flatfish at depths of 100-300 m over the continental shelf (ICES, 2007). Species-specific French landings data for the Celtic Seas report 12 t of R. undulata in 1995, 6 t in 1996, 10 t in 1997, after which landings fell to 2 t in 1998, 1 t in 1999, to 0 t in 2000-2001 (ICES, 2007). This species' preference for shallow waters places it within the range of intensive artisanal coastal fisheries operating off the western coast of Africa (Walker et al., 2005); while there are no species-specific catch data for these catches, this species is presumably a utilized bycatch of these artisanal fisheries, as well as demersal trawl fisheries operating in this area. Exploitation of the continental shelf is also high in the Mediterranean Sea (Massuti and Moranta, 2003).

The petitioner asserts that there are no species-specific conservation measures in place for this species, and the species' life history characteristics (delayed age at maturity, long generation time of 14-15 years), and low fecundity) may increase the risk of extinction to R. undulata.

The petitioner has presented substantial information indicating that this species is negatively affected by fishing throughout its range, the lack of regulatory mechanisms, and potentially the species' K-selected life history. Based on the best available information, we find that the threats of overutilization by fisheries, inadequate existing regulatory mechanisms, and other natural factors may be impacting R. undulata to a degree that raises concerns of a risk of

extinction, with significant population declines throughout its range. We conclude that the petition presents substantial scientific information indicating that the petitioned action of listing R. undulata as threatened or endangered may be warranted.

Rhinobatos cemiculus

According to the petitioner and the IUCN assessment for R. cemiculus, this species occurs in marine and brackish waters in subtropical areas of the Atlantic, from the northern coast of Portugal to Angola, and it is also found throughout coastal Mediterranean waters (Notarbartolo di Sciara et al., 2007a). It is demersal, living over sandy or muddy substrates in shallow waters to about 100 m depth. It swims slowly over the bottom or partially buries itself under the substrate. Its maximum size varies (TL up to 192 cm for males, 230 cm for females), and its diet is composed primarily of prawn, crab, and other crustaceans and fish. It was once regarded as common within the southern Mediterranean, especially in the Gulf of Gabés on the east coast of Tunisia. However, preliminary surveys indicate populations have since diminished substantially. Few or no specimens were observed during several trawl surveys from the mid-1970s through the early 1980s in its African range. Its population size is unknown, and it has a decreasing trend.

The fins of this species are highly prized in western Africa (100 Euro/kg), so this species is a major target species of artisanal fisheries. Abundance and size of individuals have decreased throughout its West African range. It is caught as bycatch by the shrimp trawl fishery in shallow inshore waters, and this has caused large decreases in catch and probable extirpation in some areas. In Senegal, for example, landings have decreased from 4,050 tons per year in 1998 to 821 tons per year in 2005; the actual fishing pressure on this species is likely to be

higher because of the lack of reporting in artisanal fisheries in West Africa and the number of foreign vessels fishing legally and illegally within this region. It used to be a typical resident in the Balearic Islands, but now has become extinct locally, and it appears to be locally extirpated from the Alboran to the Aegean Sea. Rhinobatos cemiculus is one of the main targets of specialized fishing teams in Guinea-Bissau. Even in areas outside the closure areas, the reduction in size has continued, indicating catches of younger specimens. Within the closed areas this species is still caught as bycatch in teleost gillnet fisheries. In Guinea-Conakry, fishing is allowed year-round, and catches are higher during the species' birthing and mating season, when they congregate. Gravid females are specifically targeted for the large size of their fins, and finning of embryos has been reported.

No active conservation measures are in place in the Mediterranean for R. cemiculus. In Mauritania, the species has been protected since 2003 as part of a ban on directly targeted elasmobranch fishing in the Banc d'Arguin, and in Guinea-Bissau, three marine protected areas have been established. However, R. cemiculus is still caught as bycatch in other fisheries in these areas. No species-specific regulations exist for the management of shark and shark fisheries in the Sierra Leone.

While the petitioner presents little species-specific fisheries catch data, it presents substantial information that fishing pressure is high on this species, and that this pressure has already led to declines in population, declines in size, and local extirpations in certain areas. The targeted fishing during the mating and spawning times of this species may present a significant threat to this species. Species-specific conservation measures and regulations are lacking. Therefore, we find that the petition presents substantial scientific information

indicating that the petitioned action of listing R. cemiculus as threatened or endangered may be warranted.

Rhinobatos horkelii

According to the petitioner and the IUCN assessment for R. horkelii, this coastal species is distributed along the Brazilian coast and farther south to Mar del Plata, Argentina (Lessa and Vooren, 2007). Adults migrate to coastal waters with depths of less than 20 m from November to March. Litter size is 4 to12 pups, with more pups produced by larger mothers. Pregnancy is in two stages (dormancy from April to November in deeper, colder water, and embryonic development from December to February in warmer shallow waters), with 1-cm embryos observed in December and 29-cm embryos in February. Females reach full maturity at 9 years of age, males at 6 years of age. Its population size is unknown, and it has a decreasing trend.

Fishing is the main threat to this species. Southern Brazilian fisheries show total landings increased from 842 t in 1975 to 1,804 t in 1984, then declined continuously to 157 t in 2001. The average trawl CPUE of this species in southern Brazil in 1993-1999 was 17 percent of that observed during the period 1975-1986, indicating a decline in abundance of more than 80 percent since 1986 (Miranda and Vooren, 2003; Vooren et al., 2005). Catches increased slightly after 2000, when trawl fleets from southern Brazil exploited refuge area for a part of this species' population (Martins and Schwingel, 2003; Vooren et al., 2005). After that, CPUE fell again by 31 percent from 2002 to 2003, and the population is considered to be at critically low levels, and it is scarce in coastal waters (Vooren et al., 2005). Catches now consist mostly of juveniles with likely only smaller mature individuals being caught, meaning fewer pups per reproductive cycle per mature guitarfish. Similar to the R. cemiculus, the R. horkelii is targeted

by artisanal fisheries during its birthing aggregations, with catches comprising 98 percent pregnant females during this time.

Permits for directed fishing are no longer issued, and bycatch must be thrown overboard, but these laws are not effectively enforced. Regardless, bycaught animals are often dead by the time they are brought up to the surface. Trawl fishing within 3 nm of the coast of southern Brazil is prohibited, but this represents protection from only one of the fishing threats.

The decrease in CPUE, the species' high age at maturity, the correlation between age of females and number of pups, the species' low fecundity combined with its vulnerability to fishing because of predictable annual mating and birthing aggregations and the lack of effective regulatory mechanisms may put this species at risk of extinction. Therefore, we find that the petition presents substantial scientific information indicating that the petitioned action of listing R. horkelii as threatened or endangered may be warranted.

Rhinobatos rhinobatos

According to the petitioner and the IUCN assessment for R. rhinobatos, this species is distributed in the Atlantic from the southern Bay of Biscay southward to Angola, and in the Mediterranean where it prefers the warmer waters of the southern and eastern regions (Notarbartolo di Sciara et al., 2007b). It is demersal and found in shallow waters in the intertidal zone to depths of 180 m, over sandy, muddy, shell and occasionally micro-algal covered substrates. It swims slowly along the sea bottom or partially buries itself under the substrate, feeding upon benthic invertebrates and fish. It is viviparous, with no placenta, and it produces 4 to 6 pups per litter, and 1 to 2 litters per year per female, and its gestation period is 4 months. Neither the age at maturity nor the longevity is known for either sex. Its population

size is unknown, and it has a decreasing trend. While little is known about the population sizes of this species, there has been a marked decline in its abundance in the northern regions of the Mediterranean.

The species is likely threatened by habitat degradation in its nursery grounds. Fishing occurs throughout most of its range. Like R. cemiculus, it was historically common throughout the northern Mediterranean, but absent from the recent Mediterranean International Trawl Survey, suggesting extirpation there. It is still present in the catch in portions of the southern shore, and potentially elsewhere along the Mediterranean African coast, but a large proportion of those catches are immature juveniles. It is caught as common bycatch of shrimp trawl fisheries in the eastern Atlantic. It is also caught in artisanal bottom set fisheries in Sierra Leone and dried for export to Ghana for human consumption. There is evidence of population declines in the eastern Atlantic. In Senegal, for example, the landings of all guitarfishes have decreased dramatically, with landings peaking in 1997 at 4,218 t and gradually decreasing to an estimated 821 t in 2005. In Guinea-Bissau, this species is one of the main targets of specialized shark fishing teams, and recent surveys indicate that its populations have diminished substantially (Fowler et al., 2005). Recent changes in mesh net size in the area will result in higher catch of juveniles. It is still caught incidentally as bycatch in teleost gillnet fisheries and industrial demersal trawl fisheries targeting cephalops and crustaceans and coastal teleosts. It is reportedly common in Sierra Leone, caught as bycatch of shrimp trawl fisheries operating in shallow inshore waters. It is frequently captured in Gambia (A. Mendy pers. comm., 2006).

There are no species-specific conservation measures. In Mauritania, there is a ban on directly targeted elasmobranch fishing in the Banc d'Arguin, and R. rhinobatos is more abundant

there, comprising 2 percent of the shark catch in 2004. In Guinea-Bissau, three marine protected areas have been established. However, the R. cemiculus is still caught as bycatch in other fisheries in these areas.

Given the likely extirpation of this species in the northern Mediterranean, evidence of population declines in the eastern Atlantic, the continued fishing pressure on the species, and the lack of species-specific conservation measures, we find that the petition presents substantial scientific information indicating that the petitioned action of listing R. rhinobatos as threatened or endangered may be warranted.

Trygonorrhina melaleuca

According to the petitioner and the IUCN assessment for T. melaleuca, not much is known about this species, as it is known only from a few specimens taken in shallow water in St. Vincent's Gulf in Southern Australia, and its extent of occurrence is estimated at less than 5,000 km^2 (Stevens, 2009). The largest specimen measured 90 cm. While this species may be a mutant form of the Southern fiddler ray, until further systematic studies can be carried out, the two forms are considered valid species. Its population size and population trend are unknown.

The petitioner asserts that recreational and commercial fishing occur in this species' area of occurrence, and the species is susceptible to trawl, hook, and net fisheries. Further, the petitioner points out that the species is rare in shallow water, so any bycatch is of concern. No conservation measures are in place for this species.

The condition of being rare is an important factor to consider when evaluating a species' risk of extinction; however, it does not by itself indicate the likelihood of extinction of that species, nor does the condition of being rare constitute substantial information that listing under

the ESA may be warranted. To determine whether listing of a rare species may be warranted, there must also be substantial information indicating the rare species is both exposed to and responding in a negative fashion to a threat such that the species may be threatened with extinction. While the petitioner notes that recreational and commercial fishing occur in this species' area of occurrence, it provides no catch data, and we have no way of evaluating whether the species is impacted by fishing. We had no information on T. melaleuca or threats to the species in our own files. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for T. melaleuca.

Threats to the Bony Fishes

The 15 bony fish species petitioned for listing (Colpichthys hubbsi, Latimeria chalumnae, Tomicodon abuelorum, Pterapogon kauderni, Halichoeres socialis, Paraclinus magdalenae, Paraclinus walkeri, Chaetodontoplus vanderloosi, Azurina eupalama, Scarus trispinosus, Argyrosomus hololepidotus, Mycteroperca fusca, Mycteroperca jordani, Paralabrax albomaculatus, and Enneapterygius namarrgon) are currently listed as either "endangered" or "critically endangered" on the IUCN Red List. The petition asserts that these species are being threatened with extinction by four of the five ESA section 4(a)(1) factors--habitat destruction, overutilization, inadequacy of regulatory mechanisms, and natural factors--which we discuss in turn below.

The introductory threats discussion is general, with only occasional references to specific petitioned species, with the threats later repeated in the species-specific section (discussed below). Some of the general threats discussion is not clearly or causally linked to the

petitioned species (e.g., discussion of dead zones yet no identification that these occur in the petitioned species' ranges; discussion of the threat of climate change in general terms without showing how it affects particular species; and discussion of mangrove removal as causing a species to be threatened or endangered, without providing any population size or trend information for the species). The petition also references worldwide human population growth as a threat for all of the petitioned species. However, a rising human population by itself may not necessarily be a threat to a species, if, for instance, human activities are managed such that habitat is preserved or species are not over-exploited. Similarly, human-mediated threats can occur at a level that renders a species in danger of extinction in the absence of a growing human population. Thus, information that the human population is growing, on its own, does not indicate that the growing human population is a threat.

In the regulatory mechanisms discussion, the petitioner argues that there are no adequate regulatory mechanisms for the petitioned bony fishes. Only one of the petitioned bony fishes has a stable population trend, though it is still subject to significant threats, and none of the petitioned bony fishes is characterized as having an increasing population.

The petition notes that only one fish species (Latimeria chalumnae) is listed on CITES Appendix I, and it references the limitations inherent in CITES listings from the coral section of the petition. According to Article I of CITES, species listed on Appendix I are those that are the most endangered among CITES-listed animals and plants; they are threatened with extinction and CITES prohibits international trade in specimens of these species except when the purpose of the import is not commercial, for instance, for scientific research. Based on the CITES definitions and standards for listing species on Appendix I, the species' actual listing on

Appendix I is not itself an inherent indication that these species may now warrant threatened or endangered status under the ESA. Species classifications under CITES and the ESA are not equivalent, and criteria used to evaluate species are not the same. The petitioner also makes generalized statements about MPAs and other measures of protections in this section, mentioning some of the limitations of these MPAs for the five petitioned bony fishes with portions of their ranges in an MPA (Mycteroperca jordani, Chaetodontoplus vanderloosi, Paralabrax albomaculatus, Azurina eupalama, Paraclinus walker). We do not consider these general and unsubstantiated statements as substantial information that listing may be warranted due to an inadequacy of regulatory mechanisms for all of the petitioned species. Where the petition provides species-specific information on this threat, that information is considered in the individual species sections below.

The petition discusses the very small geographic ranges and limited dispersal ability of several petitioned bony fishes (e.g., Halichoeres socialis, Latimeria chalumnae), arguing that a very small range increases the extinction risk of the species because the entire species could be affected by local events and limited dispersal ability can decrease the potential for recolonization following the loss of a subpopulation or area of habitat. The petition notes that several of the petitioned bony fishes are already at risk as low-fecundity or K-selected species, rendering them even more vulnerable to synergistic impacts of multiple threats. Despite this, we do not consider these natural factors alone to constitute substantial information that listing under the ESA may be warranted. There must be additional information to indicate that the species may be exposed to and respond in a negative fashion to a threat. For example, in the case of L. chalumnae, which we discuss further below, information is presented to suggest that

the petitioned species may have been extirpated from some areas, and estimated population size is low enough to suggest that this extirpation, in combination with other threats, may be contributing to the extinction risk of this species. These biological and ecological factors are examined on a species-specific basis below, if information is available.

Overall, we find that the four major threats discussed for bony fishes in the introductory section of the petition are not well supported and/or substantiated and do not necessarily constitute substantial information that listing any of the 15 species may be warranted. While the information in this introductory section is otherwise largely accurate and suggests concern for the status of fishes in general, the broad statements and generalizations of threats for all petitioned bony fish species do not constitute substantial information that listing may be warranted for any of the petitioned species. There is little information in this introductory section indicating that particular petitioned species may be responding in a negative fashion to any of the discussed threats. We will consider the few instances in the introductory section that specifically link threats to a particular petitioned species in our discussion of threats to that particular species.

Colpichthys hubbsi

According to the petitioner and the IUCN assessment for C. hubbsi, this species is endemic to the Eastern Pacific, found only in the uppermost part of the Gulf of California and the Colorado River Delta (Findley et al., 2010). Its extent of occurrence is 5,000 km^2, but its area of occupancy is unknown. It occurs in shallow water over mud and over muddy sandy substrates, to depths of 4 m. Adults feed on crustaceans and gastropods. The petition provides no information on population size or trend.

The petition asserts that this species is threatened by all five of the ESA section 4(a)(1) factors. Threats under the first factor, "present or threatened destruction, modification, or curtailment of habitat or range," include cessation of flow from the Colorado River, coastal development and climate change, sedimentation and general water quality, and tidal power development. The petition discusses each of these in a general way, but it does not provide information to indicate that C. hubbsi is negatively affected by these threats. Since this species likely has an extremely restricted geographic range, the petition asserts that the lack of flow from the Colorado River resulting from dam construction, population growth, and climate change has turned the river into a desert, endangering dozens of species. The petition states that habitat degradation will only get worse as climate change is predicted to further reduce runoff by 10-30 percent by 2050 (Waterman, 2012). It also states that the El Borrascoso area of the species' northern Gulf of California habitat is threatened by planned development that will destroy offshore habitat through dredging and destroy geologic outcrops with construction activity. The petition also notes that shrimp mariculture and increased growth of coastal cities will destroy coastal habitat, resulting in an increase in construction projects, dredging of harbors and shipping channels, dumping of waste, run-off pollution and increased sedimentation, deforestation, and increased tourism. According to the petition, climate change is expected to further magnify these coastal pollution problems, increasing eutrophication, hypoxia, and anoxia and resulting in more "dead zones." Similarly, the decreased water quality caused by agricultural runoff and the decrease in needed sediments are cited as cause for concern about this species' habitat. The petition also notes that potential development of tidal power, if implemented, will result in severe impacts and irreversible loss of the Upper Gulf habitat. As

with other species accounts, the petitioner cites Zamora-Arroyo et al. (2005) to support its assertion that, "[i]n the case of habitat destruction resulting from coastal development, the severity of impacts is high with low reversibility." While all of these threats are of concern to an ecosystem, nothing in the petition indicates whether or how C. hubbsi is affected by these threats.

Threats under the second section 4(a)(1) factor, "overutilization for commercial, recreational, scientific, or educational purposes," include unsustainable trawling and artisanal fishing of C. hubbsi's prey (benthic fauna) and shrimp farming that may cause mortality of estuarine organisms at water intake screens and increase eutrophication from pond effluent discharge into coastal areas. Again, the petition provides no information indicating whether or how these threats affect C. hubbsi.

Under the third section 4(a)(1) factor, "disease or predation," the petition asserts that shrimp farming in C. hubbsi's range causes increased threat of disease when disease and viral pathogens from the ponds escape to the open Gulf. Also, this threat is likely to increase as development of the coasts adjacent to its range continues. However, no information is provided on whether or how disease from shrimp farming is affecting the C. hubbsi.

Under the fourth section 4(a)(1) factor, "inadequacy of existing regulatory mechanisms," the petition notes that no species-specific conservation measures are in place for this species. The species is found in the Colorado River Delta Biosphere Reserve, but the petition asserts that, while this location does extend the species some level of protection, it is inadequate because it does nothing to remove the upstream dams stopping water from reaching the Gulf of California, increase the amount of water that they release, stop climate change from further

reducing river flow, or stop shrimp aquaculture projects from threatening the species. We do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. Again, we look for substantial information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion; then we assess the potential significance of that negative response.

Finally, under the fifth section 4(a)(1) factor, "other natural or manmade factors affecting its continued existence," the petition notes that the synergistic effects of the aforementioned threats could conspire to cause the extinction of the species.

As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on C. hubbsi or threats to the species. After evaluating the information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for C. hubbsi.

Latimeria chalumnae

According to the petitioner and the IUCN assessment for L. chalumnae, based on fossil evidence, this species was once global (Musick, 2000). It was believed to be extinct until the 20th century, when the first live specimen was found in 1938. It is now found off the coast of southeastern Africa, primarily at the Comoros Islands, northwest of Madagascar and east of

Tanzania, with scattered populations and individuals found off the northern tip of Tanzania and off the coasts of Madagascar, South Africa, and Mozambique. The first specimen of another coelacanth species (L. menadoensis) that likely shares the same ancestor with L. chalumnae was found in Indonesian waters in 1998.

Latimeria chalumnae inhabits deep-sea caves and overhangs near vertical marine reefs, about 200 m below the surface, off newly formed volcanic islands, in water temperatures of 18-23 ^{o}C. It survives only a few hours in captivity or in shallow waters. Its lifespan is estimated to be between 80 and 100 years, though another estimate is 60 years. It is ovoviviparous, and based on two pregnant specimens, its fecundity is between 5 and 26 pups. Its long gestation period of 3 years is the longest of any vertebrate, and its age at maturity is 16 years for females.

The Comoran population size was estimated to be about 500 in 2008 (Dinofish, Undated), though the petition stated it was less than 500. According to Browne (1995), Fricke, in a then recent issue of the journal Nature, reported that he believed there were about 200 coelacanths along a 5-mile stretch of the Grande Comore coast, where the only known community of substantial size lives. The population trend is unknown. However, there is some evidence that over a 3-year period (1991-1994), the average number of L. chalumnae per cave off the Comoros fell from 20.5 to 6.5 (Browne, 1995, reporting on Fricke's annual submersible census of this area that had begun in 1989). The petitioner did not provide us with the Fricke report in Nature, nor did we have a copy of it in our files to review.

The petition asserts that this species is threatened by four of the five ESA section 4(a)(1) factors. Under the first factor, "the present or threatened destruction, modification, or curtailment of habitat or range," the petition notes that the massive increases in human

population numbers in East African countries are resulting in degraded habitat through damaging agricultural practices, overgrazing, deforestation, destruction of wetlands, and mining. All of these practices, according to the petition, increase the load of silt moving off the coast and into L. chalumnae coastal habitat. The petition goes on to note that scientists have established that L. chalumnae individual are loyal to a particular home range, living there for over 14 years (Fricke, 2001), and that this range likely covers a mere several kilometers of coastline. This, according to the petition, means that L. chalumnae individuals are unlikely to be able to leave habitat degraded by siltation, and they may experience local extinctions based on this impact. Finally, the petition cites Green et al. (2009) as support for its statement that bathymetric methods to identify potential habitat for L. chalumnae have had disappointing results with little success, and therefore, it appears that scientists may have found most or all of the existing L. chalumnae and that habitat loss threatening those individuals could cause total extinction of the species.

Under the second ESA section 4(a)(1) factor, "overutilization for commercial, recreational, scientific, or educational purposes," the petition contends that L. chalumnae is being captured for trophies, scientific research, televised entertainment, notochordial fluid for Asian longevity serums, and accidental capture as bycatch (Froese and Palomeres, 1999). Latimeria chalumnae can be sold legally only to the Comorian government at an official price of $150, more than 1 ½ times the average Comorian yearly income (Joyce, 1989). But more recently, the black market price for this species is $2,000, more than 20 years' worth of income for the average Comorian. Even more recently, the price seems to have risen to $4,500 per dead specimen. This species' meat is unpalatable, but there is evidence of a black market trade by

private collectors and a market among museums and scientists for specimens (Joyce, 1989; SGForums, 2006; Monster Fish Keepers, 2009; Maybe Now, Undated; Nicholson, Undated). No individual L. chalumnae has survived for more than 20 hours at the surface, given the difference in pressure and oxygen present at shallow depths (Prehistoric Wildlife, Undated; Joyce, 1989). There was also interest in acquiring this species to create a longevity serum from its notochordial fluid; while the 1987 study showing that the fluid promoted long life has been debunked, it is still possible that the practice continues (Joyce, 1989; Fricke, 2001). Perhaps the biggest threat to this species is bycatch by fishers fishing in known coelacanth habitat (Fricke, 2001) because this type of fishing is a substantial industry in these rural communities. While there have been efforts to find ways to return L. chalumnae individuals to the ocean alive after capture, the actual state of affairs is that, because it is illegal to land the fish, fishers usually kill it and throw it away (Browne, 1995). Finally, because these fish are seen as fish that have come alive from the fossil record, they are sought after as a trophy (Froese and Palomeres, 1999). Therefore, the petition contends that commercial overutilization represents a significant threat to this species.

Under the fourth ESA section 4(a)(1) factor, the petition asserts that national, local, and international efforts to protect this species are insufficient. The petition states that the Comoros Islands national ban on landing L. chalumnae does nothing to prevent bycatch, which is fatal. The petition goes on to say that other countries within L. chalumnae's range do not have similar regulations. It notes that the Islamic Sunni of at least 11 villages on the island of Grand Comoro have adopted this species, so anyone who hurts it in any way "violates the code of the Sunni and is shunned by the community" (Fricke, 2001). However, the petition points out that this does

not address bycatch of the species, nor does it cover other areas of its habitat. Finally, the petition asserts that, while this species is listed in CITES Appendix 1, this listing is neither effective at deterring catches in the rural fishing villages near the species' habitat where villagers likely do not know of the restriction and may not intend on shipping the captured fish out of the country, nor could it deter unintentional bycatch.

Finally, under the fifth ESA section 4(a)(1) factor, "other natural or manmade factors affecting its continued existence," the petition points to breeding issues resulting from an estimated population size of less than 500 individuals. Given L. chalumnae's low population size, the petition asserts that the species is threatened by stochastic events and the low likelihood of males and females encountering each other frequently enough to breed successfully. This is exacerbated by the low fecundity of this species and the extremely long gestation period (3 years). This, together with the late age at first maturity (16 years for females), means that females cannot produce a litter of pups until they are about 19 years old. The petition contends that these factors exacerbate the species' extinction risk.

Springer (1998) hypothesized that, at some earlier time, the ancestor of the present coelacanth species must have had a more-or-less continuous distribution that was interrupted later by a barrier. During the late Jurassic (ca. 140 Mya), just prior to the beginning of the breakup of the southern continents (Audley-Charles et al., 1981, figure 3.3, as cited in Springer, 1998), Africa, Madagascar, Antarctica, and Australia were united, and Africa was linked northwards with the Eurasian plate. The distribution of ancestral Latimeria was more-or-less continuous along the coasts of these massed continental blocks. India separated from Madagascar and began its move north in the early Cretaceous (140– 120 Mya; Audley-Charles

et al., 1981, figure 3.4, as cited in Springer, 1998), possibly carrying coelacanths with it. Madagascar separated from Africa shortly thereafter, but its separation ceased by magnetic anomaly 2 (ca. 115 Mya; Besse and Courtillot, 1988, as cited in Springer, 1998; however, Rabinowitz et al., 1983, as cited in Springer, 1998, propose that Madagascar began separating from Africa about 180 Mya and ceased at 120 Mya). India continued its 'flight' north and began colliding with the Eurasian plate in the Eocene (40–50 Mya; Audley-Charles et al., 1981, figure 3.8, as cited in Springer, 1998). Continuous and still continuing movement of India into the Eurasian plate caused the building of the Himalayan Mountains, which resulted in the formation of many great rivers that flooded into the Indian Ocean down both coasts of India and the coast of Burma (e.g., the Indus, Ganges, and the Ayeyerwady (Irawaddy)). The heavy siltation covered the bottom, both near shore and deeply offshore, and eliminated habitats suitable for Latimeria. India thus formed a barrier between coelacanth populations in Africa–Madagascar and those in Malaysia–Indonesia. If this hypothesis is correct, the siltation from the damaging agricultural practices, overgrazing, deforestation, destruction of wetlands, and mining resulting from an increasing population in East African countries could negatively affect L. chalumnae habitat.

While it is possible, as the petition asserts, that most existing L. chalumnae individuals have been found, it is not likely. Our review of Green et al. (2009) does not leave us with the same impression about the success of the efforts to identify potential L. chalumnae habitat. In fact, it appears that Green et al. (2009) was able to use bathymetric methods to identify several areas where the species is likely to be found, as well as identify other areas that should be investigated because of the likelihood of finding similar habitat. As Green et al. (2009) states,

> "the extent of the coelacanth distribution in the western Indian Ocean covers a considerable area, making the search for further elusive coelacanth populations a daunting task. The area of interest extends northwards along the eastern coast of South Africa from East London to Mozambique and Tanzania—as far north as the Tanzanian–Kenyan border, and the entire coastline of Madagascar (Green et al., 2009). Specific target sites for coelacanth habitation using geophysical data have been identified for the continental shelf off the Port Shepstone–Port St Johns stretch of coastline. Northern Mozambique, between Olumbe and Port Amelia, is considered another potential target site, based on the similarity of the submarine canyons to those of Sodwana Bay. Canyon size, depth of incision and the position of the canyon heads, relative to the shelf break, mirror those of the Sodwana Bay canyons. As this is a preliminary study it is recommended that higher resolution multibeam echosounding be undertaken in these areas in order to more accurately identify the features considered most likely to support a coelacanth population. These would be based on the presence of caves, overhangs and notches that coelacanths are known to inhabit. It must also be emphasized that despite poor coverage of areas such as Tanzania and Madagascar, these should not be excluded as potential sites for further, more detailed exploration."

We do not have any information subsequent to Green et al. (2009) to indicate whether this work has continued, but given the progress reported by Green et al. (2009), we conclude that it is highly unlikely that most individuals of L. chalumnae have been found.

The petition stated that the estimated decline in number of L. chalumnae per cave over a period of 3 years (1991-1994) described by Brown (1995) indicates a massive reduction in the population, but it did not provide census numbers to which we can compare the most recent 2008 population size estimate of 500 (even though it seems that Fricke was conducting annual census surveys beginning in 1989). Therefore, it is not clear whether this most recent population size estimate of 500 is higher, lower, or the same as the 1991 or 1994 population size. If the population size of the Comoran population in 1991 was about 500, it is possible that the decline noted by Brown (1995) is the result of a natural population fluctuation or an emigration of L. chalumnae individuals away from the survey area (Brown, 1995). However, even a population size of 500 individuals is relatively small. Further, while it is possible that more L. chalumnae habitat will be identified and more individuals found, it is possible that the population size will not be significantly higher. Given the number and level of threats that exist (i.e., low population size estimate of 500, likelihood of increased siltation loads with increased coastal development in eastern Africa, the species' 3-year gestation period, fishing bycatch, the curio/trophy trade, and the inadequacy of regulatory mechanisms), we find that the petition presents substantial scientific information indicating that the petitioned action of listing L. chalumnae as threatened or endangered may be warranted. The petition also requested that, if we list this species as threatened or endangered, we also list L. menadoensis based on similarity of appearance. If, after conducting a status review of L. chalumnae, we determine that it is threatened or endangered under the ESA and list it as such, we will make a determination on this "similarity of appearance" request at a later date.

Tomicodon abuelorum

According to the petitioner and the IUCN assessment for T. abuelorum, this species is endemic to the Eastern Central Pacific, where it is known from the Gulf of Nicoya, Costa Rica, to Darien, in the Gulf of Panama (Hastings and Dominici-Arosemena, 2010). It is found only in areas with Rhizophora mangrove prop roots where it is usually attached to root surfaces or moving about and feeding from them at high tide. Juveniles have been recorded from floating mangrove leaves, which they may use as a dispersal mechanism into the mangrove root systems. The diet of T. abuelorum consists of barnacle cirri and barnacle cyprid larvae, small oysters and other bivalves, amphipods, and harpacticoid copepods. The species is fairly common in suitable mangrove habitat, with a mean density of about 0.8-1.4 fish per mangrove root. It is found year-round (Szelistowski, 1990). It is a highly fecund species, as Szelistowski (1990) found females as small as 18 mm to possess paired gonads with developing eggs, and three specimens between 19-26 mm with ovaries containing 156-211 eggs. However, according to the petition and IUCN assessment, this species is currently in decline because of extensive mangrove extraction throughout its range (Jiménez, 1994; FAO, 2007). As of 2000, the area of mangroves remaining in Costa Rica and Panama combined was estimated to be only about 2,000 km^2. Further review of FAO (2007) indicates that the annual change in mangrove area in Costa Rica during the periods 1980-1990, 1990-2000, and 2000-2005 was -1.7, -2.4, and -0.4 percent, respectively, and in Panama, -2.7, -0.8, and -0.5 percent, respectively (FAO, 2007). The petition cites Ferreira et al. (2005) when it includes the following quote, "Surveys in other regions show that the reduction of mangroves brought some fish species to extinction…" The petition acknowledges that this species' habitat overlaps with several MPAs, but despite this, it asserts that the species is still endangered with populations decreasing. To assert this population trend,

it cites the IUCN assessment, which simply states that the population trend of this species is decreasing, without providing any references.

As noted above, the petition provides little support for its assertion that the population trend of this species is decreasing, and T. abuelorum is fairly common in suitable mangrove habitat. Also, in reviewing Ferreira et al. (2005), we did not find the quote that the petition cited regarding extinction of a parrotfish in Brazil. Ferreira et al. (2005) actually stated, "Spearfishing of adults has probably excerpted [sic] a strong influence on the extirpation of this fish from Brazilian reefs. In addition, juvenile S. guacamaia have strong functional dependency on mangroves (Mumby et al. 2004). Local extinction of S. guacamaia following mangrove removal and overfishing in the Caribbean (Mumby et al. 2004) suggests that the same process might have facilitated the extinction process in Brazil." This paper referred to local extirpation, not extinction, and the cause was suspected to be a combination of overfishing and mangrove removal, not only mangrove removal. The petition provided no information on fishing threats that might combine with habitat threats to cause extinction risk to T. abuelorum.

While it appears that T. abuelorum is found only in mangrove areas that have undergone significant reductions (1980–2005), the last 5 years of this data series indicate that mangrove losses in Costa Rica and Panama have slowed down (FAO, 2007). We have no information in our files on the status or trend of T. abuelorum. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion,

and then we assess the potential significance of that negative response. After evaluating the information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for T. abuelorum.

Pterapogon kauderni

According to the petitioner and the IUCN assessment for P. kauderni, this species has a restricted range and is endemic only to the Banggai Archipelago, which lies in the Banggai-Sula platform in eastern Indonesia (Allen and Donaldson, 2007). Its geographic range is about 5,500 km^2, but within this range, maximum potential available habitat is much smaller (about 426 km of coastline extending from the shore to about 100 m off the coast (so, only about 34 km^2). It has been recorded at 17 of the 20 major islands and at 10 of the 27 minor islands. It occurs primarily in shallow sheltered bays and harbors, mainly on reef flats with sandy bottoms and sea grass beds, and it is found in 0.5-6 m depths, but most commonly found between 1.5-2.5 m depths. It is most common in calm habitats on the protected side of larger islands. Juveniles associate with sea grasses, sea urchins, sea stars, sea anemones, soft corals, and corals; adults shelter between the spines of sea urchins but also among anemones, corals, stony hydrozoans, rocks and artificial structures such as jetties. According to census work, 43.7 percent of the groups are associated with hard corals. Pterapogon kauderni is a diurnal carnivore-planktivore that feeds principally upon copepods, but also a generalist opportunistic species. It has a relatively short life span, matures at an average age of 0.8 years, and has a generation length of 1.5 years.

In early population surveys, this species had been identified on 27 out of 50 islands. Based on average population density from these initial surveys, its total population size was

estimated at 2.4 million fish in 2004 (Vagelli, 2005). It has the highest degree of population structure in a marine fish; this genetic isolation is likely a result of the lack of suitable habitats between subpopulations coupled with the species' lack of dispersal mechanisms. According to the IUCN assessment, P. kauderni has a decreasing trend, based on comparisons of density estimates in unprotected sites conducted in 2004 (mean density of 0.07 individuals/m^2) to a historical baseline density of a subpopulation localized inside a bay in Southwest Banggai Island which has been off limits to all fishing since before the beginning of the trade (0.63 individuals/m^2).

The petition asserts that local threats to the species include habitat degradation (harbor dredging and associated pollution; sedimentation; harvest of its habitat (corals and anemones) for the aquarium trade; coral bleaching; inability of P. kauderni to move to new areas on its own when sea temperature rises; disappearance of corals because of global climate change; pollution and contaminants that threaten the Luwuk subpopulation), overutilization (aquarium trade), disease (4 parasite types; viral disease) and predation, the inadequacy of regulatory mechanisms (e.g., no concerted effort to replace wild-caught fish with captive-bred fish for the aquarium industry; despite tracking of exported fish by the Indonesian government, it is lumped in the "aquarium fish" category; local bans by private owners of bays and villages offer some protection, but bans are seemingly driven by private interests such as pearl collection or disputes with outside collectors; lack of CITES listing), and other natural or manmade factors (low fecundity; parental care; elevated level of energy investment per offspring; direct development; lengthy oral incubation period; susceptibility to indiscriminate collecting; lack of dispersal

mechanisms; frequent earthquakes). The petition adds that synergistic effects of these threats also contribute to the species' risk of extinction.

The petition argues that the United States represents one of the largest importers of wild-caught P. kauderni, making an ESA listing particularly effective.

Some of the threats identified by the petition are too general and not supported with specific information on whether or how the threat would affect P. kauderni (harbor dredging and associated pollution; sedimentation; harvest of its habitat (corals and anemones) for the aquarium trade; disease and predation; frequent earthquakes). Broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on these threats with regard to P. kauderni.

However, we have additional information in our files, including a Species Survival Network fact sheet (undated) that discusses data obtained in March 2007 indicating exports from local fishers have increased to one million fish annually (Vagelli, 2007), not including fish captured by larger fishing boats based in Bali. This evidence indicates that a minimum of 55 percent of captured fish die or are discarded due to injury or damage prior to international export. Also, to demonstrate significant changes in the health and vigor of coral populations and fish diversity within reef habitat, this fact sheet reports that, during the March 2007 census, extensive areas of coral reef habitat were found to be covered with algae, a fungus, or a bacteria

making them unsuitable as habitat for the Banggai cardinalfish and other fish species (Vagelli, 2007). The fact sheet adds that no certification system for those collecting the Banggai cardinalfish has been established and, according to the Indonesian representative of the Marine Aquarium Council, no such system is being contemplated at this time (Vagelli, 2007). Finally, the fact sheet notes that, while the species can be bred in captivity, no captive breeding projects are in place and not a single village in the Banggai Archipelago is presently considering such a project (Vagelli, 2007).

We also have a copy of CoP14 Inf. 37, Additional Information on Biological and Trade Criteria in Support of an Appendix-II Listing for the Banggai Cardinalfish, Pterapogon kauderni, which includes information compiled by the United States through consultations and new information gleaned from March 2007 surveys conducted by Dr. Alejandro Vagelli (Vagelli, 2007). In discussing extent of trade, the United States notes that FAO's estimate that a minimum cumulative catch of 19.2 million over the duration of the fishery would be required to reduce a population of 21.6 million fish to 2.4 million, based on a worst case assessment of a population without a density dependent response, is unrealistic, as it does not take into account the effects of removal of individual fish on overall productivity of each subpopulation. Based on a conservative estimate, a single pair could produce 500 offspring in a lifetime, of which a maximum of 5-10 percent may survive to an adult life stage. Thus, annual removal of 700,000-900,000 fish will result in a much higher cumulative loss of fish due to the effects of this removal on annual production. The United States also notes that there are three principal collecting operations with an estimated current capture magnitude of at least 900,000 fish per year, based on assessments by Vagelli in 2007. This estimate is considerably higher than recent

estimates as reported in the FAO panel review (500,000), and is not indicative of a decline in total harvest as suggested by Reksodihardjo-Lilley in the FAO review. While we agree with the conclusion that demand for these species may be 50-60 percent of the reported capture (500,000), the estimates of mortality reported in the FAO review (10 percent) are much lower than that reported by collectors and exporters. Interviews with fishermen and buyers within the principal collecting operations reported mortality estimates of 25-30 percent and rejection of another 15 percent because of poor health (Vagelli, 2007).

Finally, we found an undated Defenders of Wildlife Final Report in our files that provides details on P. kauderni mortality during collection (25-50 percent), holding (50 percent), transportation (average of 25-30 percent, though occasionally as high as 50 percent), and rejection by buyers due to injury and damage to specimens (15 percent). This report also notes that, in captivity, P. kauderni commonly die from epidemics of iridoviruses (Megalocytivirus) (Weber et al., 2009), and captured P. kauderni sold in the United States experience high infection levels of this virus (Weber et al., 2009), with infection occurring post-capture at either export or import centers (Weber et al., 2009). The high rate of injury, disease, and death creates a positive feedback loop driving more and more collection to compensate for supply-chain losses.

This report also summarizes new field survey information. Specifically, populations from Masoni Island, monitored since 2001, have experienced dramatic reductions (Vagelli, 2008). As of 2007, only 37 fish were found in the 4,800 m^2 Masoni Island survey area and only 150 fish could be found on the entire island (Vagelli, 2008). At Peleng Island, monitored since 2002, only 27 fish remained (Vagelli, 2008). At Bakakan Island the population size dropped

from 6,000 individuals in 2001 to just 350 fish in the most recent surveys (Vagelli, 2008). Limbo Island has possibly experienced the most severe declines. In 2001, only 0.02 fish per m^2 could be located at Limbo Island (Vagelli, 2008). Almost no fish remained at Limbo Island by 2004 and the population has not recovered since then (Vagelli, 2008). By 2007 P. kauderni populations had been reduced by about 90 percent across the survey area (Vagelli, 2008). In addition to the threats posed by overfishing, P. kauderni have experienced population declines from several of the other problems imperiling Indonesia's coral reefs. Although P. kauderni is not targeted for collection by destructive fishing practices, its habitat is commonly degraded by dynamite fishing and cyanide fishing of other fish species (Indrawan, 1999; Lilley, 2008).

The petition presents a valid argument to show that densities of numerous subpopulations have decreased, and that P. kauderni may be threatened by overfishing and international trade pressure. Also, the population has apparently declined from 21.6 million fish to 2.4 million fish. Further, the estimated maximum potential available habitat within this range (34 km^2) is relatively small compared to its geographic range (5,500 km^2). Given these factors, the number and level of threats that exist (overfishing for the aquarium trade; inability of P. kauderni to move to new areas on its own when sea temperature rises; potential disappearance of corals because of global climate change; the inadequacy of regulatory mechanisms; and other natural or manmade factors such as low fecundity, parental care, elevated level of energy investment per offspring, lengthy oral incubation period, susceptibility to indiscriminate collecting, and lack of dispersal mechanisms), and the additional information in our files, we find that the petition presents substantial scientific information indicating that the petitioned action of listing P. kauderni as threatened or endangered may be warranted.

Halichoeres socialis

According to the petitioner and the IUCN assessment for H. socialis, this species is found only in the Pelican Keys, Belize, and it has an extremely small estimated range of less than 10 km^2 (Rocha et al., 2010). Adults are reef associated, while juveniles are mangrove and shallow reef dependent. It is commonly found in shallow coral reefs over coral, sand, rubble, or sea grass substrata to a depth of 10 m. Juveniles feed on zooplankton and form evasive, compact schools when threatened. The petitioner did not provide any information on population size or trend. Juveniles are abundant where they occur, but adults are rarely observed.

The petitioner asserts that habitat destruction (continued extensive mangrove and coral removal and dredging for coastal resort development) is threatening this species, citing Zamora-Arroyo et al. (2005) to highlight that the severity of these coastal development impacts is high with low reversibility. Pelican Key, where this species occurs, is a World Heritage Site, but the petitioner contends that there is no actual protection afforded this species. The petitioner also notes that the lack of adult specimens observed likely means that there are few opportunities to breed, increasing the species' vulnerability to extinction. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on H. socialis or any specific threats it may face.

Upon review of Randall and Lobel (2003), cited by the petitioner, we note that these authors, who described this new species discovered in 1997, speculate that it had not been discovered before because of its occurrence in the limited area of reef and mangrove islet habitat confined to the Pelican Cays of Belize. Randall and Lobel (2003) expect it may be found at other comparable sheltered environments elsewhere along continental shores of the Caribbean Sea. They add that ichthyologists have not given this environment the same attention as they have other habitats such as coral reefs. Further, they note, because of its small size (less than 40 mm standard length), H. socialis may be easily mistaken with the juvenile phase of H. pictus (another labrid fish in the Caribbean Sea that is zooplanktivorous) by anyone not familiar with all labrids and their color morphs. Finally, Randall and Lobel (2003) note that this species is difficult to collect because it forms evasive schools instead of seeking shelter in the substratum. When the second author returned to the Pelican Cays to collect specimens of this species, he set up a barrier net and collected 102 specimens. Of the 49 fish used for the description, 46 were mature. We note that the petitioner stated adult individuals are rarely observed. There was no indication that it was difficult to collect this number or that efforts to collect more were made or were unsuccessful. For all these reasons, we find that it is likely that the species is more widespread than the petitioner contends, and it may be fairly abundant.

After evaluating the information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for H. socialis.

Paraclinus magdalenae

According to the petitioner and the IUCN assessment for P. magdalenae, this species has a restricted range (1,131 km^2), and it is known only from a few specimens found in the immediate vicinity of Magdalena Bay, Baja California, Mexico (McCosker et al., 2010). Rosenblatt and Parr (1969) made 60 or more collections at appropriate depths between Cape San Lucas and Los Angeles Bay, Lower California, and did not find any specimens of this species in any of these areas. Based on this dated information, P. magdalenae is found at depths of 7-21 m, on rocky substrates. Upon review of Rosenblatt and Parr (1969), which was cited by the petitioner, it is interesting to note that the authors noted that the maximum depth of occurrence of this species is unknown, since diving techniques at the time allowed only very limited bottom time at depths much below 100 ft (30.5 m), and deep rocky areas therefore remained relatively unknown. They concluded that much more collecting would be necessary before confident statements could be made concerning the distribution of fishes characteristic of rocky shores at moderate depths, such as P. magdalenae. We have no information to indicate that any further sampling in this area or the areas nearby has taken place in the 45 years since Rosenblatt and Parr (1969) conducted their sampling. The petitioner provided no population information, but noted that the trend of this species is stable.

The petitioner asserts that habitat loss from coastal development, urban and industrial pollution, massive tourism development and various potentially harmful extractive activities in the Magdalena Bay Area poses a serious risk of extinction to this species because of its restricted range (Hastings and Fischer, 2001). Also, effluent, including untreated domestic sewage and industrial waste, is discharged directly into Magdalena Bay, and intertidal nearshore and wetland areas are being degraded (School for Field Studies, 2004). The petitioner again

cites Zamora-Arroyo et al. (2005) to highlight the high severity of these impacts that have low reversibility. Localized human population growth, according to the petitioner, has a substantial negative effect on fish populations, especially human populations located near the coasts. The citations provided to support the petitioner's assertion that large number of people live close to the coastline, dead zones are increasing from urban pollution, and climate change is expected to further magnify these coastal pollution problems are not specific to the Magdalena Bay region or to P. magdalenae. Finally, the petitioner notes that there are no species-specific conservation measures in place for P. magdalenae, and this puts the species at increased risk of extinction.

While all of these threats are of concern to an ecosystem, nothing in the petition or its cited references indicates whether or how P. magdalenae is affected by these threats. For example, the Hastings and Fischer (2001) paper discusses management priorities for Magdalena Bay, given the current lack of a working resource management plan there, with little information on natural resources in the area; they do not mention P. magdalenae. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on P. magdalenae numbers or threats to the species. After evaluating the species-specific information

presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for P. magdalenae.

Paraclinus walkeri

According to the petitioner and the IUCN assessment for P. walkeri, this species is endemic to the Eastern Pacific, known only from the 40 km^2 in Bahia San Quintín, Baja CA Sur, Mexico (Hastings and McCosker, 2010). It is found in shallow tide pools and upper reef flat to depths of 6 m, and it is considered to be very rare, though it was formerly considered to be common. No population or trend information is available.

The petitioner asserts that this species is threatened by habitat loss and degradation due to agricultural runoff and coastal development throughout its restricted range and cites Zamora-Arroyo et al. (2005) to highlight the high severity of these impacts that have low reversibility. While the species is located in protected habitat (Bahia de San Quintín), the petitioner asserts that this protection has been inadequate to protect the species, as evidenced by its rarity now. The petitioner notes that this is understandable because the protected habitat appears to include only the lagoon itself, whereas the threats to the species originate on land. Also, the location of the entire population in one small area leaves P. walkeri extremely vulnerable to localized events, further threatening the species, according to the petitioner.

While all of these threats are of concern to an ecosystem, nothing in the petition or its cited references indicates whether or how P. walkeri is affected by these threats. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a

threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on P. walkeri numbers or threats to the species. Because Rosenblatt and Parr (1969), which is a description of the taxonomy, distribution, and variations of the eleven Pacific species of Paraclinus, was cited as support for the petition to list P. magdalenae (though not cited as support for the petition to list P. walkeri), that paper is now in our files; we note that these authors pointed out that none of the eleven Pacific species of Paraclinus have extensive bathymetric distributions. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for P. walkeri.

Chaetodontoplus vanderloosi

According to the petitioner and the IUCN assessment for C. vanderloosi, this angelfish species has one of the smallest ranges of all known Indo-Pacific coral reef fish, only 275 km^2 between Samarai Island and the southeastern corner of Basilaki Island near Papua New Guinea (Allen, 2010). Its estimated area of occupancy is even smaller (about 15 km^2). Allen (2010) states, "Despite extensive searching in other parts of Milne Bay Province (which includes approximately 265,000 km^2 of ocean) during five visits, it was only seen in a small area." According to Allen (2010), there has been a definite decline in population observed over the past 25 years (G. Allen pers. comm., 2010). Allen (2010) states that the total population is thought to be less than 1,500 individuals, with decreasing trend, though we could not find any

support for this estimate in the petition or in Allen (2010). Nor is any information on the extent of the "definite decline in population" available.

The petitioner asserts that this species is apparently associated with relatively cool temperatures, as Allen (1998) reported the occurrence of exceptionally low water temperatures (22-24 ^{o}C) in Milne Bay Province, compared to 26-28 ^{o}C in other parts of Milne Bay Province. While the petition notes that the threats to this species are not well understood, it states that the species is clearly dependent on a pattern of cool-water upwelling from the deep ocean, and climate-associated changes in ocean circulation and increasing temperatures may be responsible for the observed decrease in this species. Allen (2010) speculates that strong currents that sweep southward through narrow passes between islands may cause displacement of surface waters and consequent upwelling of colder water from below. The petitioner cites Brainard et al. (2011) to support its statement that ocean surface temperature will continue to rise. The petitioner also notes that no conservation measures are in place to protect C. vanderloosi.

It is not clear how much of a decline this species has undergone in the last 25 years. Nor is it clear how the petition or Allen (2010) came up with a population size estimate of less than 1,500 for C. vanderloosi. While it appears that this species prefers cooler temperatures, it is not clear that ocean warming will affect C. vanderloosi negatively. For example, Brainard et al. (2011, at p. 48) reported that, in comparing climate observations to models, "Wentz et al. (2007) found that global and tropical ocean winds have been increasing over the last 20 years (though slower in the tropics), in contrast to models that indicate winds will weaken. Along with these changes in winds, models and observations both show an increase in atmospheric water vapor and precipitation (Wentz et al., 2007). Although these findings suggest that tropical wind-

driven ocean currents will continue changing, the details about future directions and speeds of these surface currents remain insufficiently understood to adequately predict the potential influences to coral reefs generally or to the 82 candidate coral species in particular." Brainard et al. (2011, at p. 49) also state, "The conflicting patterns of circulation under future warming makes it difficult to assess the likelihood of various future circulation scenarios, mainly owing to poorly constrained model parameterizations and uncertainties in the response of ocean currents to greenhouse warming (McMullen and Jabbour, 2009)." We are convinced that surface water temperatures will increase with future global climate change. However, as is evident from these quotes from Brainard et al. (2011), we cannot predict ocean circulation patterns that will result from future climate changes, let alone how these changes might affect C. vanderloosi.

As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on C. vanderloosi numbers or threats to the species. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for C. vanderloosi.

Azurina eupalama

According to the petitioner and the IUCN assessment for A. eupalama, this species is endemic to the eastern Pacific Ocean, found only in waters around the Galápagos Islands (Allen et al., 2010). It has apparently disappeared following the intense 1982-1983 El Niño event, when greatly increased sea temperatures had strong adverse effects on the islands' marine fauna and flora. Recent targeted searches have not encountered any individuals. Because its sister species, A. hirundo, occurs in a similar environment, the Revillagigedos Islands, near the northern limit of the Eastern Tropical Pacific, Allen et al. (2010) speculate that populations of A. eupalama may still exist on islands off Peru with warm temperate conditions, such as the Lobos Islands.

This species may already be extinct (Robertson and Allen, 2006). It was considered 'occasional' in 1977, and prior to the 1982-1983 El Niño event, it was recorded from Floreana, Española, Isabela, Marchena, Santiago, San Cristobal, Santa Cruz, and Santa Fe Islands in the Galápagos Archipelago. Numbers of this species were greatly reduced during the 1982-1983 El Niño, and there have been no sightings since that time. Oceanographic environmental changes associated with the 1982-1983 El Niño event are presumably responsible for the apparent disappearance of this species from the Galápagos.

No conservation measures are in place for this species. It has historically been present in the Galápagos Islands MPA, but that protection did not stop these precipitous declines. Therefore, the petitioner argues that this species should be protected under the ESA, especially because the frequency and duration of ENSO events in this region of the Eastern Tropical Pacific appears to be increasing.

The purpose of the ESA is to conserve species that are in danger of or threatened with extinction. The definition of an endangered species is "any species which is in danger of extinction throughout all or a significant portion of its range" (Section 3(6)). Species that are already extinct are not protected by the ESA. The best available scientific information suggests that A. eupalama is not known to be alive or exist in the wild and may already be extinct; therefore, we find that this species does not qualify for listing as endangered or threatened under the ESA.

Scarus trispinosus

According to the petitioner and the IUCN assessment for S. trispinosus, this species is endemic to Brazil with a range from Manoel Luiz Reefs on the northern Brazilian coast to Santa Catarina on the southeastern Brazilian coast (Ferreira et al., 2010). It is reef-associated, usually found in seagrass, coral reefs, on algal and rocky reefs and on algal beds at depths of 1-45 m. It is an important excavator that often feeds on live coral.

The petitioner and Ferreira et al. (2010) cited Rocha and Rosa (2001) to assert that, during the period 1996-1998, S. trispinosus was the second most abundant species in Manoel Luis State Marine Park (northeastern Brazil), being reported in 69 percent of underwater visual census surveys. We reviewed Rocha and Rosa (2001), and we note that the species reported in 69 percent of underwater visual census surveys is actually S. coelestinus, the midnight parrotfish, not S. trispinosus. Regardless, the petitioner did not assert that the population had declined in Manoel Luis State Marine Park.

According to the petitioner, S. trispinosus populations have, however, declined in two areas of Brazil: Abrolhos Bank off eastern Brazil, and Arraial do Cabo in the southeastern part

of its range. Ferreira et al. (2010) assert that on the Abrolhos Bank, which is the largest coral reef in the south Atlantic, S. trispinosus represented about 28 percent of total fish biomass in 2001, and showed a 50-percent decline in the "past 5 years" (Francini-Filho and Moura, 2008). Upon reviewing Francini-Filho and Moura (2008), we confirmed that S. trispinosus was the most abundant target species in the region in 2001, comprising 28.3 percent of total fish biomass. While we could not confirm the 50-percent decline, the petitioner also cited Francini-Filho (2005) to support this assertion. We could not confirm this because the petitioner did not provide a citation for this paper in the list of references. For the purposes of this finding, we will assume the petitioner is citing accurate information. According to a personal communication (B. Ferreira pers. comm., 2008) cited in Ferreira et al. (2010), S. trispinosus biomass has declined by 60-70 percent over the last 15 years in the southeastern part of its range (Arraial do Cabo). Population size is not known, but the trend is decreasing.

Approximately 78 percent of mixed habitat parrotfishes such as S. trispinosus are experiencing greater than 30 percent loss of coral reef area and habitat quality. Coral reef loss and declining habitat conditions are particularly worrying for some corallivorous excavating parrotfishes that play major roles in reef dynamics and sedimentation. The petitioner asserts that the extensive loss of S. trispinosus habitat that is already occurring, and that will likely occur in the future as a result of anthropogenic climate change and other human-related impacts, qualifies this species for protection under the ESA. The petitioner contends that the species is primarily threatened by spearfishing, net, and trap fishing throughout its range. Based on measured declines of S. trispinosus in at least two significant parts of its range (Abrolhos Bank in eastern Brazil, and Arraial do Cabo in the southeastern part of its range), along with

observations that large individuals have become very rare, Ferreira et al. (2010) estimate that at least 50 percent of the global population has declined over the past 20-30 years.

Further review of Francini-Filho and Moura (2008) provides some information about the effectiveness of marine protected areas in protecting S. trispinosus and other reef-associated fishes. Using a nested stationary visual census technique adapted from Bohnsack and Bannerot (1986), these researchers showed that S. trispinosus biomass increased sharply between 2001 and 2002 on a newer no-take reserve and on a multiple-use area, soon after initiation of protection in the former and the banning of the parrotfish fishery in the latter. This increase was followed by a sharp decline from 2003 on, after poaching levels increased in the no-take reserve and local fishermen decided to reopen the parrotfish fishery in the multiple-use area. The authors concluded that these results indicate that legal protection alone, without effective enforcement and continued engagement from the local fishing communities on the implementation of regulations, is not enough to guarantee the success of MPAs.
Further, the petitioner argues that the number of protected areas within its range does not include a large proportion of this species' population or habitat. There are no species-specific conservation measures in place for this species. Finally, the petitioner notes that even protected coral reefs will not be spared the damaging effects from anthropogenic climate change.

Based on the best available information, we find that the threats of habitat destruction (coral reefs), overutilization by fisheries, inadequate existing regulatory mechanisms, and anthropogenic climate change may be impacting S. trispinosus to a degree that raises concerns of a risk of extinction, with significant population decline in two significant parts of its limited

range. We conclude that the petition presents substantial scientific information indicating that the petitioned action of listing S. trispinosus as threatened or endangered may be warranted.

Argyrosomus hololepidotus

According to the petitioner and the IUCN assessment for A. hololepidotus, this species is endemic to the southeast coast of Madagascar, with an area of occupancy of less than 500 km^2 (Heemstra, 2007). It is a large sciaenid, meaning it has "drumming muscles" for producing rudimentary vocalizations, and it is a benthic carnivore, feeding on other fish, crustaceans, and mollusks. While its generation length is unknown, similar large members of the same family have relatively long lifespans and long generation lengths, according to Heemstra (2007).

The population is estimated to possibly number less than 10,000 mature individuals, all in a single population that is undergoing continuing decline. Current declines are suspected to be about 10 percent over the last 3 generations (Heemstra, 2007). Despite noting that the species is undergoing continuing decline, Heemstra (2007) state that the population trend is unknown.

The petitioner asserts that pollutants resulting from the expanding human population in the region are increasingly negatively impacting the inshore areas and estuaries that form this species' nursery areas. While fisheries data and fishery-independent data appear to be non-existent for this species, the petitioner argues that it is likely caught both deliberately and accidentally as bycatch, since local people eat this species, primarily for subsistence (though there apparently is some documented trade). The petitioner argues that any level of fishing is inappropriate for a species with such a small population. There are no conservation measures in place for this species. Finally, the petitioner contends that this species has a low capacity to

tolerate environmental impacts without suffering irreversible change, increasing the likelihood that anthropogenic impacts will subject A. hololepidotus to extinction.

Species classifications under the IUCN and the ESA are not equivalent, and data standards, criteria used to evaluate species, and treatment of uncertainty are also not necessarily the same. Thus, as we noted in an early section of this finding, we instead consider the information on threats identified by the petitioners, as well as the data on which they are based, as they pertain to each petitioned species. A population size of 10,000 mature individuals and a 10 percent decline over 3 generations do not indicate that a species is threatened or endangered under the ESA. And, as stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on A. hololepidotus numbers or threats to the species. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for A. hololepidotus.

Mycteroperca fusca

According to the petitioner and the IUCN assessment for M. fusca, this species has a limited range (eastern Atlantic around the Azores and Madeira, Portugal, and Cape Verde and

the Canary Islands, Spain) (Rocha et al., 2008). It is a demersal species that occurs in rocky areas at depths from 1-200 m. Juveniles are also found in tide pools. This species was previously abundant, but now locally rare. Researchers have observed local extinctions in the most intensively fished areas in the islands of the Canary Archipelago. The population size is unknown, but the trend is decreasing. Individuals are rarely observed greater than 40 cm total length, which is about half of its known maximum size.

The major threat to M. fusca is fishing pressure that targets spawning aggregations. This has led to population declines, altered sex ratios, and extirpation of spawning aggregations for other serranids. This species has shown one of the strongest responses to variations in fishing intensity and human population among the Canary Islands, which supports the hypothesis that major human intervention has affected the abundance and biomass of this species in the Canary Islands (Tuya et al., 2006). Specific areas of occurrence and the condition of the M. fusca population in these areas include: Santa Maria (Azores) at Baixa do Norte, where a reproductive aggregation is known and monitored annually; Sao Miguel (Azores) at Ilheus dos Mosteiros, where adults are very rare; Terceira (Azores) at Ilheus da Mina, where adults are very rare; Faial (Azores) at Baixa do Castelo Branco, where formerly the largest known reproductive aggregation in the Northeast Atlantic occurred, but where it is now totally extirpated by overfishing; MAP of Garajau (Madeiras), where it is very common, including adults, but it is presently unknown whether reproductive aggregations occur; and North Coast of Porto Santo Island (Madeiras), where it is very rare, but adults are regularly seen at depths below 30 m (Barreiros, J.P., pers. comm., UAC/IMAR). Several MPAs cover this species' range, but the petitioner contends that it needs protection throughout its range.

Based on the best available information, we find that the threats of overutilization by fisheries, inadequate existing regulatory mechanisms, and the species' vulnerability caused by its spawning aggregations may be impacting M. fusca to a degree that raises concerns of a risk of extinction, with extirpations and population declines in different areas of its range. We conclude that the petition presents substantial scientific information indicating that the petitioned action of listing M. fusca as threatened or endangered may be warranted.

Mycteroperca jordani

According to the petitioner and the IUCN assessment for M. jordani, this species has a restricted range, in the Eastern Central Pacific from southern La Jolla, CA, to Mazatlán, Mexico, and into the Gulf of California (Craig et al., 2008). It is found on rocky reefs and in kelp beds. Adults are common in shallow water from southern California to Mexico. Juveniles are unknown in California waters, and few large adults are taken there. Large adults feed on other fish and have been reported feeding on juvenile hammerhead sharks. This species is large, with a recorded maximum size of nearly 2 m and maximum weight of 91 kg. Mycteroperca jordani is currently in "severe decline" throughout the Gulf of California, with fishers indicating a 50-70 percent decline in catch rates since 1950 in the Gulf of California. It was abundant in central Baja California and probably dominated the rocky-reef fish community in terms of biomass, but it declined dramatically in the 1970s and is now scarce. Based on changes in the number of individuals within spawning aggregations, the population decline from the 1940s to the present could be greater than 99 percent. The species comprised 45 percent of total state finfish production in 1960, but fell to only 6 percent by 1972. Recent estimates suggest that it comprises less than 1 percent of total finfish catch now. The population size is unknown,

though there is a decreasing trend. Much of the information on the significant declines since the 1940s is from Saenz-Arroyo et al. (2005), cited by the petitioner. Saenz-Arroyo et al. (2005) discuss the "shifting baseline" syndrome that can affect the stock assessment of a vulnerable species by masking real population trends and thereby put marine animals at serious risk. These authors reviewed historical evidence and naturalists' observations and systematically documented fishers' perceptions of trends in the abundance of M. jordani to show that it has dramatically declined. Population abundance dropped rapidly after the 1970s, long before fishery statistics were formally developed for this area, making historical tools valuable for understanding historical abundance of M. jordani and the extent of the fishery.

The petitioner asserts that all five ESA section 4(a)(1) factors threaten the survival of M. jordani. Under the first section 4(a)(1) factor, "overutilization for commercial, recreational, scientific, or educational purposes," the petitioner asserts that coastal development in the northern Gulf of California (particularly Bahia La Cholla Marina) is expected to promote reef habitat destruction and that planned development threatens the El Borrascoso area of the Gulf of California habitat through dredging; destruction of geologic outcrops; and modification of coastal lagoons for shrimp mariculture, resulting in damage from construction and pollution from effluents. As with other species accounts, the petitioner also cites Zamora-Arroyo et al. (2005) to support its assertion that, "[i]n the case of habitat destruction resulting from coastal development, the severity of impacts is high with low reversibility." The petitioner adds that increased human population growth in coastal cities means more construction, dredging, dumping of waste, runoff pollution, sedimentation, deforestation, and increased tourism, and asserts that urban pollution contributes to increasing "dead zones." Also, climate change is

expected to further magnify these coastal pollution problems, resulting in mass fish mortality from multiple algal blooms. Finally, the petitioner contends that potential tidal power development, if implemented, will result in severe impacts and irreversible loss of the Upper Gulf habitat.

Under the second section 4(a)(1) factor, "overutilization for commercial, recreational, scientific, or educational purposes," the petitioner notes that this species is heavily targeted by recreational and sub-national fisheries throughout its range and incidentally caught by shrimp trawlers in the Gulf of California. The petitioner also asserts that the species' spawning aggregations, which are restricted to the Mexican northwest, are heavily fished, and this is problematic because it makes it much easier for population-level numbers of M. jordani to be effectively targeted by fishers at easily identifiable locations and times. Thus, higher numbers of specimens can be easily taken, and spawning can be interrupted, leading to additional declines in overall M. jordani numbers. U.S. recreational fishers also target these same areas.

Under the third section 4(a)(1) factor, "disease or predation," the petitioner points to shrimp farming as an increased threat of disease, from the "escape of disease and viral pathogens from the ponds to the open Gulf." This threat may increase as coastal lagoons adjacent to newly developed areas could be modified for shrimp mariculture, according to the petitioner.

Under the fourth section 4(a)(1) factor, "the inadequacy of existing regulatory mechanisms," the petitioner notes that, while this species occurs partially within the Alto Golfo Biosphere Reserve, it offers nominal or minimal protection because enforcement is lacking.

Finally, under the fifth section 4(a)(1) factor, "other natural or manmade factors affecting its continued existence," the petitioner asserts that the skewed sex ratio (females outnumber males significantly) decreases the likelihood of reproduction and increases the likelihood that the species will go extinct if the disparity continues. The petitioner also notes that the species is vulnerable to extinction in part because of its K-selected life history (large, low productivity, low numbers of mature adults), which makes it susceptible to the rapid, chaotic change it is experiencing. Finally, the petitioner contends that, because M. jordani is threatened by multiple stressors and is a K-selected species, these multiple threats are likely to cause extinction pressure greater than the mere additive pressure of each threat alone (synergistic effects).

The threats under the first (habitat degradation) and third factor (disease and predation) are general, and the petitioner provides no specific information on whether or how they are affecting M. jordani. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. No such information on these threats was provided in the petition.

However, the petitioner provides convincing evidence to support the assertion that the second (overutilization), fourth (inadequacy of regulatory mechanisms), and fifth (other natural or manmade factors) factors may be affecting M. jordani in a negative way. The likelihood that

M. jordani has undergone a severe decline since the 1940s, combined with the high fishing pressure, the lack of regulatory mechanisms to control this fishing pressure, and the species' habit of congregating in large numbers for spawning may all contribute to an increased risk of extinction. Based on the best available information, we find that the threats of overutilization by fisheries, inadequate existing regulatory mechanisms, and other natural factors may be impacting M. jordani to a degree that raises concerns of a risk of extinction. We conclude that the petition presents substantial scientific information indicating that the petitioned action of listing M. jordani as threatened or endangered may be warranted.

Paralabrax albomaculatus

According to the petitioner and the IUCN assessment for P. albomaculatus, this species is found only in the Galápagos Islands (Robertson et al., 2010). It is a reef-associated fish that inhabits rocky reefs and nearby sand patches. It is found in depths of 10 to 75 m, and it prefers cooler water (Reck, 1983). It preys on mobile benthic crustaceans, octopus, squid, and cuttle fishes. Estimated age at first maturity is 1-2 years and longevity 10-12 years, based on other similar species; therefore, generation length is estimated to be about 5 years. No population size information is available, though a substantial decline (about 70 percent) in population numbers occurred between 1998 and 2001, as inferred from fish landings, with no evidence of a decrease in fishing effort (Danulat and Edgar, 2002). It has a decreasing trend, according to the petition. Upon review of Danulat and Edgar (2002), however, it appears that the petitioner neglected to include the first year of data from the time series analyzed by Danulat and Edgar (2002). Danulat and Edgar (2002) analyzed handline catch data from the M. olfax (bacalao) fishery in the Galápagos from 1997 through 2001. While M. olfax was by far the most abundant in this

fishery, the fishery captured five other species, including M. albomaculatus. The catches of M. albomaculatus were 12, 23, 16, 16, and 9.7 tonnes live weight in 1997, 1998, 1999, 2000, and 2001, respectively. Even if we use only the data from the years 1998 through 2001, it is not clear how the petitioner arrived at an approximately 70-percent decline from 1998 through 2001. Using the catches reported in Table 5 (p. 51) by Danulat and Edgar (2002), we come up with a 58-percent decline for this portion of the time series. Regardless, the decline is actually a 19-percent decline when the entire time series is included, and 19 percent does not seem to represent a substantial decline. In fact, Danulat and Edgar (2002) speculated that the warmer temperatures associated with the 1997-1998 El Niño event contributed to the larger sizes, higher abundance, and larger proportion of M. olfax captured during the period 1997-1998. This El Niño event could have very well contributed to the higher numbers of M. albomaculatus in 1998. Or, the differences in catches during the 5-year period could have been the result of a natural population fluctuation.

The petitioner states that P. albomaculatus will lose habitat at its preferred depths as surface ocean temperatures rise with climate change. Further, while its entire range is within an MPA, it is still subject to commercial fishing. The frequency and duration of ENSO events in this region appears to be increasing, and the petitioner states that juveniles of this cool water species, observed primarily in relatively shallow water, may be negatively affected by increased temperatures during severe ENSO events. The petitioner does not provide any specific information indicating whether or how these threats are affecting M. albomaculatus.

As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that

listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on M. albomaculatus numbers or threats to the species. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for M. albomaculatus.

Enneapterygius namarrgon

According to the petitioner and the IUCN assessment for E. namarrgon, this coastal species is endemic to the bauxite rocks of Gove Peninsula, south of Cape Arnhem in the Northern Territory of Australia (Fricke et al., 2010). It is distributed across a very small area of approximately about 317 km^2. The petition provides no population information or trend information.

The petitioner asserts that bauxite is the most important aluminum ore and over 85 percent of the bauxite mined globally is converted to alumina for the production of aluminum metal. Further, Australia is the world's leading producer of bauxite, accounting for 36 percent of world production, and this mine contains the highest-grade bauxite deposits in the world. The petitioner also notes that it is predicted that the resource life for existing bauxite operations is around 70 to 75 years. There are currently no species-specific conservation measures in place for this species.

The petitioner provides no information on whether and how E. namarrgon is being affected by bauxite mining. As stated previously, broad statements about generalized threats or identification of factors that could negatively impact a species do not constitute substantial information that listing may be warranted. Further, we do not necessarily consider a lack of species-specific protections as a threat to the species or even problematic in all cases. We look for substantial information within the petition and within our own files indicating that not only is the particular species exposed to a certain factor, but that the species may be responding in a negative fashion, and then we assess the potential significance of that negative response. We had no information in our files on E. namarrgon numbers or threats to the species. After evaluating the species-specific information presented in the petition, we find that the petition does not present substantial scientific or commercial information indicating that listing may be warranted for E. namarrgon.

Petition Finding

After reviewing the information contained in the petition, as well as information readily available in our files, including the sections of the petition applicable to all of the petitioned species as well as the species-specific information, we conclude the petition in its entirety does not present substantial scientific or commercial information indicating the petitioned action may be warranted for 5 of the 10 species of skates and rays (Dasyatis margarita, Electrolux addisoni, Okamejei pita, Pastinachus solocirostris, and Trygonorrhina melaleuca), and 10 of the 15 species of bony fishes (Colpichthys hubbsi, Tomicodon abuelorum, Halichoeres socialis, Paraclinus magdalenae, Paraclinus walkeri, Chaetodontoplus vanderloosi, Azurina eupalama, Argyrosomus hololepidotus, Paralabrax albomaculatus, and Enneapterygius namarrgon).

However, as described above, we find that there is substantial scientific or commercial information indicating the petitioned action may be warranted for 5 of the 10 species of skates, and rays and 5 of the 15 species of bony fishes, and we hereby announce the initiation of a status review for each of these species to determine whether the petition action is warranted. These 5 skates and rays are Bathyraja griseocauda, Raja undulata, Rhinobatos cemiculus, R. horkelii, and R. rhinobatos, and the 5 bony fishes are Latimeria chalumnae, Pterapogon kauderni, Scarus trispinosus, Mycteroperca fusca, and Mycteroperca jordani.

Information Solicited

To ensure that the status review is based on the best available scientific and commercial data, we are soliciting information relevant to whether the 10 species we believe may be warranted for listing (Bathyraja griseocauda, Raja undulata, Rhinobatos cemiculus, R. horkelii, R. rhinobatos, Latimeria chalumnae, Pterapogon kauderni, Scarus trispinosus, Mycteroperca fusca, and Mycteroperca jordani) are threatened or endangered. Specifically, we are soliciting information, including unpublished information, in the following areas: (1) historical and current distribution and abundance of each species throughout its range; (2) historical and current population trends; (3) life history information; (4) data on trade of these species, including products such as fins and notochords; (5) historical and current data on catch, bycatch, retention, and discards in fisheries; (6) ongoing or planned efforts to protect and restore these species and their habitats; (7) any current or planned activities that may adversely impact these species; and (8) management, regulatory, and enforcement information. We request that all information be accompanied by: (1) supporting documentation such as maps, bibliographic

references, or reprints of pertinent publications; and (2) the submitter's name, address, and any association, institution, or business that the person represents.

References Cited

A complete list of references is available upon request to the Office of Protected Resources (see ADDRESSES).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended **(**16 U.S.C. 1531 et seq.).

Dated: February 18, 2014.

Samuel D. Rauch III,
Deputy Assistant Administrator for Regulatory Programs,
National Marine Fisheries Service.

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